

Student Academic Conference Abstract Books

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2002

## 4th Annual Student Academic Conference: Conference Program & Abstracts Volume IV

Minnesota State University Moorhead

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- Student
- Academic
- Conference

## Conference Program & Abstracts Volume IV

The MSUM showcase of academic achievement

Wednesday, April 10, 2002

Comstock Memorial Union

Minnesota State University Moorhead



*This conference exists because of the work of the entire university community, both in terms of financial and moral support. Supporters include: Strategic Grant Initiatives Fund, President's Office, Academic Affairs, Student Affairs, Administrative Affairs, Alumni Foundation, Inter Faculty Organization, MSUAASF, AFSCME, Student Senate, Campus Activities Board, Student Activities Budget Committee, and Sodexo Services.*

# **Congratulations MSUM Students!**

**We're proud of your academic  
achievements and wish you continued  
success in all future endeavors.**

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MINNESOTA STATE UNIVERSITY  
**moorhead**

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**Alumni Foundation**



The mission of the Minnesota State University Moorhead Alumni Foundation is to develop relationships, promote the University, and provide funding to advance academic excellence at Minnesota State University Moorhead.

visit our Web site at  
[www.mnstate.edu/alumni](http://www.mnstate.edu/alumni)

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## **Purpose**

The purpose of the Student Academic Conference is to showcase the work and talent of MSUM students through presentations, posters, and creative works at a one-day conference held annually at MSUM in April in the Comstock Memorial Union. All students are encouraged to submit presentation applications. We strive to accommodate all students who wish to be presenters. The university community, parents, friends, prospective students, alumni, and employers are welcome to attend the conference to witness the excitement of intellectual exchanges among our students.

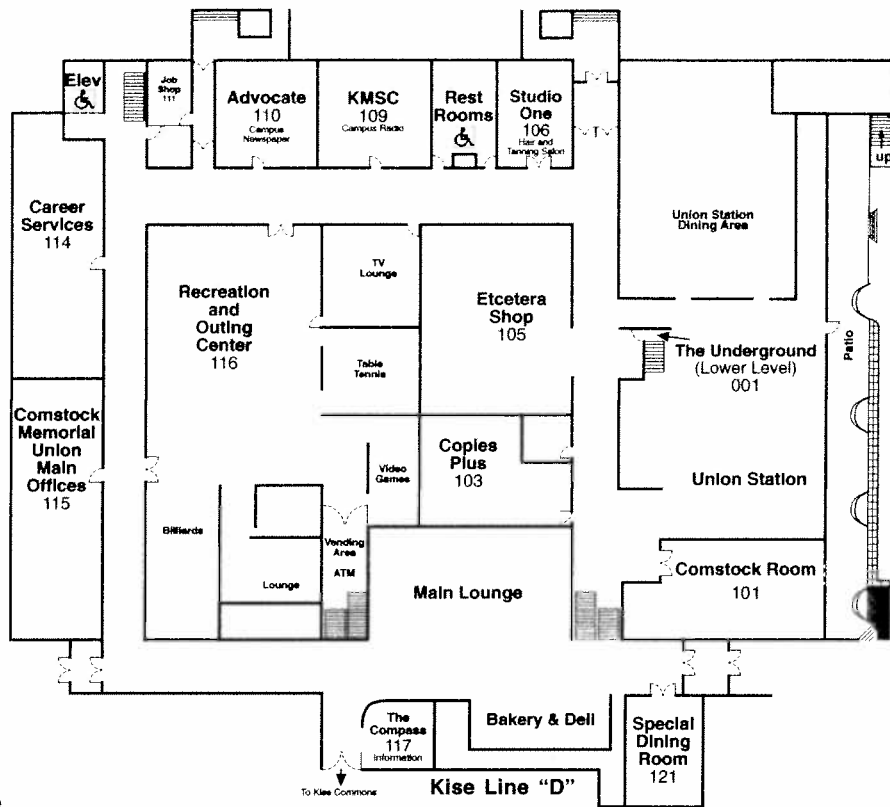
## **Sponsors**

This conference exists because of the work of the entire university community, both in terms of financial and moral support. Supporters include: Strategic Grant Initiatives Fund, President's Office, Academic Affairs, Student Affairs, Administrative Affairs, Alumni Foundation, Inter Faculty Organization, MSUAASF, AFSCME, Student Senate, Campus Activities Board, Student Activities Budget Committee, and Sodexo Services.

# Comstock Memorial Union Map

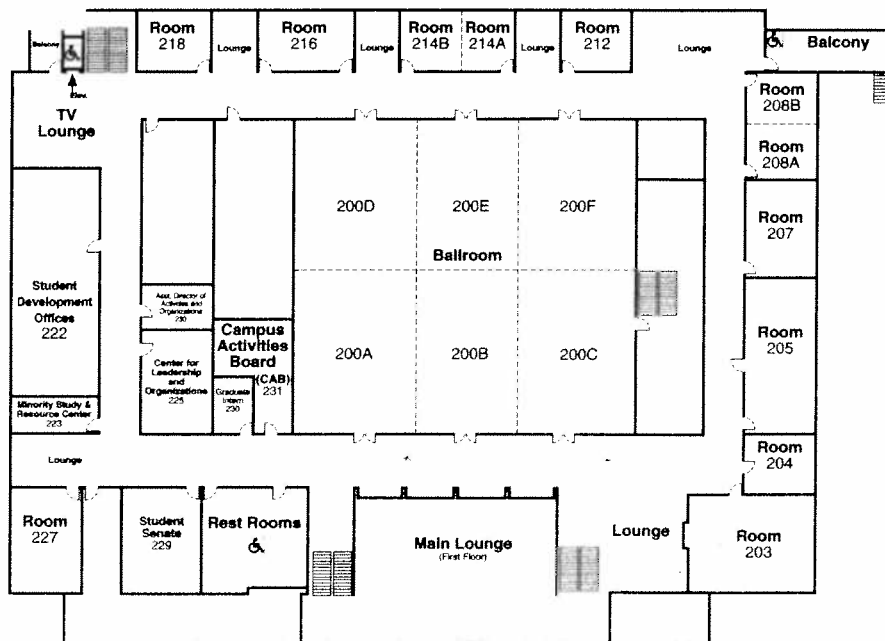


First Floor



= You Are Here

Second Floor



Comstock Memorial Union is a smoke-free environment

# How the Conference got Started

## Conference Highlights

2002	152 Presentations 235 Presenters
2001	133 Presentations 241 Presenters
2000	139 Presentations 218 Presenters
1999	107 Presentations 170 Presenters



Minnesota State University Moorhead has developed a program to encourage undergraduate research in all disciplines through the development of the Student Academic Conference. The idea of such a conference was suggested by Dr. Andrew Conteh, Political Science, during a class in spring semester of 1998 when he said, "few students have the opportunity to present at national or regional conferences." This got MSUM graduate student Ryan Sylvester thinking, and he went back to Dr. Conteh proposing that the Student Academic Conference be started. The two of them met frequently over the summer to plan and outline the mission and concept of the conference.

The two initiated meetings with the President, Vice Presidents, and Academic Deans to request support. The conference was well-supported financially and in spirit. With the endorsement of administration, the conference planners developed a list of faculty and staff from across campus representing every discipline and division and invited them to be part of the Student Academic Conference steering committee.

The conference format includes a luncheon for presenters featuring an MSUM alumnus keynote speaker on the topic of undergraduate research. The keynote is followed by a panel response composed of four undergraduate students who are selected by each academic Dean to represent their respective division (Arts & Humanities, Education & Human Services, Business & Industry, and Social & Natural Sciences). Following the luncheon there are two or three presentation sessions of approximately an hour and half each in length. Most presentations in a session are 17 minutes in length (12 minutes to present and 5 minutes for questions) but accommodations are made for specific time requests such as 30, 45, or even 60 minute workshops or panel discussions. There are 15 break-out rooms used for simultaneous presentations so attendees have to determine ahead of time which presentations they wish to attend. Throughout the conference, poster presentations are on display in the main lobby area where the conference is held.

Dr. Conteh and Mr. Sylvester remain the primary conference organizers with the assistance of various campus personnel and the advice of the steering committee. Applications to present are made available during fall semester and are due in mid-February. The conference strives to feature presentations from all academic majors across campus and to allow any student to participate. Applications are screened by the Program sub-group of the steering committee. Presentations are grouped loosely by common themes, but careful attention is paid to ensure sessions are not homogenous. This is done to promote the conference theme of sharing ideas across disciplines. The way presentations are scheduled presents attendees with the opportunity to hear multiple presentations from different disciplines within a session. Every attempt is made to accommodate audio visual requests of presenters.

There is no fee for the presenters. Presenters have the opportunity to attend the conference luncheon (at no cost) featuring the keynote speaker and student panelists. Funding for the conference has come from across campus in the past (Alumni Foundation, Academic Departments, Academic Deans, Vice Presidents, President) but, recently, the conference applied for a Strategic Initiative Grant and will operate off of the grant for another year. The conference will then be added to the regular budget of the university. The major costs to the conference are the conference luncheon for presenters, printing of the conference program with presentation abstracts, and funding for travel and hosting of the keynote speaker. Additional costs include: certificates, conference posters, conference information postcards, name tags, and other printing costs. The total per year has been less than \$4,000, but with increased participation, costs have increased each year.

Conference planners are now preparing for the 4th Student Academic Conference to be held April 10, 2002. Each year has seen progressive positive involvement from presenters, faculty, staff, and attendance at the conference.

# Letter from the President

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Greetings:

I am proud of our students who pursue scholarly and creative excellence. Many of our students become proficient scholars and artists – the annual Minnesota State University Moorhead Student Academic Conference showcases this fact.

Essentially all of the research papers, creative works, group projects, and other student presentations are created under the personal supervision of an involved faculty mentor. Personal interaction between MSU Moorhead students and faculty is instrumental to student success. This conference culminates the student work inspired by the involvement and encouragement of our faculty.

Presenting one's work beyond the classroom and in the conference setting promotes student growth and development. Those students who participate in the Student Academic Conference experience the intellectual pleasure of presenting to a genuinely interested audience of other students, faculty, and members of the community. In addition, they face the challenge of defending their ideas in a supportive community of student and faculty scholars.

As an audience member, you will encounter our students' intellectual curiosity and creativity. You will be presented with a wide array of new ideas, fresh approaches, and unique methods for arriving at creative solutions. I know that you will be impressed with the curiosity and rigor of our students.

Congratulations to all of you who contribute to the conference as student participants, faculty mentors, conference planners, and supporters. Thank you for your role in continuing Minnesota State University Moorhead's mission to foster excellence in teaching and learning.

Sincerely,



Roland E. Barden, Ph.D.  
President

# Letter from the Vice President of Academic Affairs

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## ***Memorandum***

The Student Academic Conference became a university tradition in its first year. Thinking back on that initial event in April 1999, it is apparent why the conference so easily became a part of MSU Moorhead's culture. Student learning is our core mission, and nothing is more appropriate for us to do than to celebrate student achievements in scholarship, research, and creative activity.

Students and faculty members at MSU Moorhead have long engaged in creative, meaningful learning experiences beyond the traditional classroom. As you read through the conference schedule, the level of accomplishment and the disciplinary diversity represented among the individual sessions, poster presentations, and group sessions will be immediately clear. Deciding which sessions to attend will be a difficult decision, since choosing means there will be so many excellent presentations you will miss.

So much attention in recent times has been focused on partnerships and collaborations. It is particularly important to keep in mind always that the most vital collaboration is the one between student and teacher. Today, you have the opportunity to learn from the results of so many truly special partnerships. As you move through the sessions, be certain to ask questions of the student presenters. Also, please take a moment to thank the faculty mentors, without whom the level of student accomplishment you will experience today would never have been achieved.

Bette G. Midgarden  
Vice President for Academic Affairs

# Letter from the Faculty Association

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Metamorphoses are no less remarkable for being frequent, and one of those routine miracles is the process that changes a former high school student into a poised, thoughtful professional. The Student Academic Conference both recognizes and celebrates the transformation. While ultimately students educate themselves, still faculty are there to nudge, cajole, instruct and sometimes even inspire their students. Events like the Conference give us the pleasure of watching our students make us proud.

# Letter from the Alumni Foundation

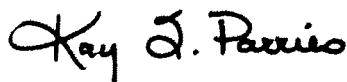
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Future Alumni,

The Student Academic Conference is testament to the importance our university places on intellectual and professional development. The Alumni Foundation is proud to support and celebrate MSU Moorhead students who share their knowledge and research.

MSUM's reputation benefits from the educational rigor and performance that is underscored by your hard work. Academic excellence is our alma mater's most important tradition.

Thank you,



Kay Parries  
President  
MSUM Alumni Foundation



# Conference Schedule

Wednesday, April 10, 2002

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- 7:30 a.m. Poster Set-Up--Registration/Information Table--CMU Main Lounge**
- 10:30 a.m. Presenter Registration--Registration/Information Table--CMU Main Lounge**
- 11:15 a.m. Seating for the Luncheon--CMU Ballroom**
- 11:30 a.m. Luncheon Starts (Welcome and Introductions)--CMU Ballroom**  
Menu: Chicken Parmesan with Penne Pasta --Served with Sautéed Green Beans [Chicken] or Same dish without chicken [Vegetarian])  
Luncheon is for presenters and invited guests.
- 11:50 a.m. Keynote Speaker--CMU Ballroom**  
Ms. Kimberly Maluski Sarte  
Senior Fiscal Analyst for the Virginia Legislative Audit and Review Commission, Richmond, VA.
- 12:20 p.m. Student Panelists--CMU Ballroom**  
Jennifer Olson, Education & Human Services  
Darcy Bakkegard, Arts & Humanities  
Holly Jorud, Business & Industry  
Nichole Korpi, Social & Natural Sciences
- 1:00 p.m. Presentation Session 1 and Poster Session 1--  
Various CMU Rooms and Poster Display Area**
- 2:20 p.m. Break**
- 2:30 p.m. Presentation Session 2 and Poster Session 2--  
Various CMU Rooms and Poster Display Area**
- 3:50 p.m. Closing Social & Poster Session 3--CMU Main Lounge**  
Refreshments sponsored by Counseling and Career Services. Presenters should attend to pick up their conference certificate.

# Conference Organizers And Steering Committee

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**Conference  
Advisor**

**Dr. Andrew Conteh**  
*Professor of Political Science*



**Conference  
Organizer**

**Ryan Sylvester**  
*Area Director Residence Life Department*



**Linda Palmer**  
*Student Organizer*



## Steering Committee

- **Layne Anderson**, Assistant Director of Event Services, CMU
- **Dr. Laurie Blunsom**, Assistant Professor, Music
- **Dr. Steven Bolduc**, Assistant Professor, Economics
- **Theresa Carson**, Assistant Professor, Speech and Theater
- **Chris Corley**, Assistant Professor, History
- **Dr. Konrad Czyski**, Associate Professor, Humanities and Multicultural
- **Jessykah Lattery**, Student
- **Dr. David Olday**, Professor, Sociology & Criminal Justice
- **Dr. Bruce Roberts**, Assistant Professor, Anthropology & Earth Sciences
- **Larry Schwartz**, Instructor Library
- **Dr. Helen Sheumaker**, Assistant Professor Humanities & Multicultural
- **Harry Weisenberger**, Assistant Professor, Counseling & Student Affairs
- **Pam Were**, Assistant Professor Library

## Conference Volunteers:

Theresa Carson, Dave Gaer, Brittney Goodman, Teresa Helfter Glover, Jean Hollar, Dr. Susan Humphers Ginther, Gwen Johanson, Deb Lewis, Karen Mehnert-Meland, Dr. Darrel Meinke, Veronica Michael, Judy Mroska, Eunice Nygard, Judy Peterson, Diane Schoenecker, Sandi Schuette, Dr. Deb Seaburg, and Barb Seiler.

## Want to get involved?

If you are interested in being a part of the steering committee for the Student Academic Conference next year or are interested in being a student organizer, please send an e-mail expressing your interest to [acconf@mnstate.edu](mailto:acconf@mnstate.edu)

## Keynote Speaker

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### **Keynote: *"Striving to Make a Difference"***

Each year an MSUM alumnus is selected to deliver the keynote address to conference attendants. This person is selected by the conference steering committee following a review of nominations received from members of the MSUM campus community. This year's keynote speaker is:



#### **Ms. Kimberly Maluski Sarte**

**Senior Fiscal Analyst for the  
Virginia Joint Legislative Audit and Review Commission,  
Richmond, VA.**

Kimberly Maluski Sarte, a 1993 MSUM alumnus, is a Senior Fiscal Analyst for the Virginia Joint Legislative Audit and Review Commission (JLARC). JLARC, a nationally known state audit commission, conducts reviews of state government programs and policies at the request of members of the Virginia General Assembly. Most recently, Sarte helped to assess the funding policies and practices for Virginia's \$7.7 billion elementary and secondary public education system. As a Fiscal Analyst, Sarte also determines the fiscal impact of legislation debated in the Virginia General Assembly.

Prior to her position with the Virginia General Assembly, Sarte worked as a budget analyst with the Office of Management and Budget (OMB), Executive Office of the President, in Washington, DC. During her tenure at OMB, she had oversight responsibility for the Internal Revenue Service and the U.S. Customs Service. Sarte interned with the Senate Banking Committee, Subcommittee on International Finance and Monetary Policy in 1994.

Sarte earned a B.A. in Economics from MSUM in 1993 and an M.S. in Public Policy Analysis from the University of Rochester (Rochester, New York) in 1995. In the fall of 1999, she was the MSUM Economics Department guest speaker for Business and Industry Day.

# Student Panelists

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Each year four student panelists are selected to respond to the keynote address. These four students represent the four academic divisions of the university: Arts & Humanities, Social & Natural Sciences, Business & Industry, and Education & Human Services. These students are selected by the Dean of each academic division following a review of nominations received from members of the MSUM campus community. This year's panelists include:



## **Jennifer Olson, Education & Human Services**

Jennifer is majoring in Elementary Education with specialties in Preprimary and Math and is originally from Moorhead, MN. As a Senior at MSU Moorhead, Jennifer is the current president of Education Minnesota Student Program (EMSP). In November 2001, she attended the National Education Association Conference in St. Louis, MO as a representative for the state of Minnesota. She takes great pride in being a MSUM Dragon and helps prospective students, freshmen and transfer students by being involved with STARS (Student Telecounseling Admissions Representatives) and Peer Advising. During fall semester she co-taught two First Year Experience (FYE) courses with Janet Aarness and Diane Wolters. She works hard to get the most out of her education courses and thus has been involved in Alpha Lambda Delta, a sophomore honors society, and Kappa Delta Pi, the education honors society. She presented at the Student Academic Conference last year and looks forward to the experience this year. Jennifer's career goal is to become an elementary education teacher.



## **Darcy Bakkegard, Arts & Humanities**

Darcy is currently a Senior at MSUM majoring in Theatre Arts with an emphasis in Directing and Acting, and minoring in Dance and Humanities. Darcy has participated in MSUM's summer theatre program, the Straw Hat Players, for the past five summers. During her college career, she has worked on more than 35 plays, either acting, directing, stage managing, or doing other technical work for each production. Darcy is an Honors Apprentice Scholarship recipient, as well as a recipient of the Mark Lukac and Drone Peterson Memorial Scholarships. She is a member of Phi Kappa Phi, the Student Advisory Board, and Blackfriars. Darcy will graduate in May and plans to attend graduate school after working in professional theatre for a few years. She hopes to teach and direct at the collegiate level in the future.



## **Holly Jorud, Business & Industry**

Holly is from West Fargo, ND and is a Senior in Accounting at MSUM. Holly is the recipient of several scholarships, including an MSUM Upperclassman Scholarship, a CPA exam scholarship from the ND Society of CPA's, and various scholarships awarded through her major. She is a member of Phi Kappa Phi, the Student Advisory Board for the College of Business, Financial Management Association, and the AICPA. She is secretary for the local IMA chapter. During her college career, Holly has been involved in the Supplemental Instruction Program as a leader for managerial accounting principals. She has also tutored accounting in a one-on-one atmosphere and tutored English in the university writing center. Holly has also had job training while a student at MSUM. She did a busy season internship with a public accounting firm in St. Paul, MN last spring and worked the summer and fall as the internal accountant for a Microsoft Great Plains Partner in Fargo. Holly looks forward to her graduation this summer and to her new job in the Minneapolis office of Ernst & Young, LLP. She believes that MSUM has provided her with an excellent education to prepare her for this career.



### **Nichole Korpi, Social & Natural Sciences**

Nichole is a Senior Biology/Chemistry double major with a biotechnology emphasis and a French minor. Over the past four years, Nichole has been a recipient of numerous scholarships both on and off campus. Nichole's most prestigious honor was receiving a Barry M. Goldwater Scholarship. Goldwater Scholarships are awarded to 300 students nationally each year in recognition of outstanding potential in science and mathematics. Nichole has been actively involved in research since her sophomore year at MSUM. Her research covers a variety of disciplines including fish behavior, organic chemistry, and most recently, cell signaling and cancer. As a result of her research, Nichole has presented at a variety of national meetings including a Zebrafish Conference in Woods Hole, MA., Ethology, Evolutionary Ecology and Conservation of Fishes Conference in Athens, GA; and the American Society of Biochemistry and Molecular Biology Conference in Orlando, FL. Regionally, Nichole has presented at the MSUM Academic Conference, and the MN Academy of Science. In 2001, Nichole won the Winchell Award in the Molecular Biology and Biochemistry Division at the Minnesota Academy of Science for best presentation in division. Nichole has published one paper in Environmental Biology of Fishes, and has three manuscripts currently in preparation. She continues to do research and will be presenting at the 2002 MSUM student academic conference, MN Academy of Science 2002, as well as ASBMB 2002 in New Orleans, LA. In addition to research, Nichole enjoys helping fellow students. She has been an undergraduate teaching assistant in both Zoology and Human Anatomy courses. Nichole is the current President of the local chapter of Beta Beta Beta, the national biological honor society, and an active member in the Chemistry Club. Nichole is very excited to graduate in May and start attending the University of Wisconsin-Madison in the fall to begin her Ph.D. in Biomolecular Chemistry.

# SCHEDULE BY ROOM

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## • CMU 101

### Session 1

- 1:00 p.m. 104 The Economics of HMO's  
 1:20 p.m. 5 The Proliferation of Light Weapons in Africa and Their Exacerbating Role in Conflict: Sierra Leone, Liberia, and Angola  
 1:40 p.m. 86 The Evolution of Mexican Cinema  
 2:00 p.m. 20 Defining a Role for the Arp2/3 Complex in Mitochondrial Morphology and Inheritance

### Session 2

- 2:30 p.m. 100 The Perception/Misperception of the Perfect Body  
 2:50 p.m. 88 Parent Child Communication Program: Case Study 1  
 3:10 p.m. 64 Differences in Na<sup>+</sup>/H<sup>+</sup> Activation in Chinese Hamster Lung (CCL39) Fibroblasts by Lysophosphatidic Acid (LPA) and Phenylephrine (PE)  
 3:30 p.m. 32 Cost/Benefit Analysis of Moorhead Wind Power Project

## • CMU 121

### Session 1

- 1:00 p.m. 143 Hands-On Herpetology: experience a standards-based high school science curricula

### Session 2

- 2:30 p.m. 145 Human Genetic Variation: experience a standards-based high school science curricula

## • CMU 200A

### Session 1

- 1:00 p.m. 34 Racial Profiling in Law Enforcement  
 1:20 p.m. 66  $\alpha$  Adrenergic Specific Signaling in Chinese Hamster Lung (CCL39) Fibroblasts  
 1:40 p.m. 157 Female Genital Mutilation: A Human Rights Abuse?

### Session 2

- 2:30 p.m. 7 Parent Child Communication Program: Case Study 6  
 2:50 p.m. 128 NAFTA- Its Benefits and Hardships to Mexican Society.  
 3:10 p.m. 28 This is "Absurd": A Look at the History, Elements, Comments and Reactions of the Theatre of the Absurd

## • CMU 200D

### Session 1

- 1:00 p.m. 114 Preference Between Two Black & White Photographs: Gestalt Laws in Composition and Perception  
 1:20 p.m. 126 The Lolita Syndrome: The Media, the Sexualization of Children, and Pedophilia  
 1:40 p.m. 23 Health and illness in developing countries  
 2:00 p.m. 103 Parent-Child Communication Program: Case Study 3

### Session 2

- 2:50 p.m. 71 The Activation of PKC $\alpha$  is Required for the Phenylephrine-induced Activation of the Na<sup>+</sup>-H<sup>+</sup> Exchanger in Chinese Hamster Lung Cells, CCL39.  
 3:10 p.m. 21 DNA Vaccine Adjuvant Activity of Mutated *S. aureus Enterotoxin C* Encoding Plasmid in Balb/c Mice

• **CMU 203**

**Session 1**

1:00 p.m.	12	Parent Child Communication Program: Case Study 5
1:20 p.m.	80	Building a Device to Test Human Skin Conductance During Functional Magnetic Resonance Imaging
1:40 p.m.	17	Normalization of Violence Against Women in Maxim Magazine
2:00 p.m.	89	The Perfect Smile

**Session 2**

2:30 p.m.	36	Legal Ethics Meets The Movies
2:50 p.m.	56	Ukraine: New Accounting for the New Century
3:10 p.m.	98	The Elderly and Depression
3:30 p.m.	31	Private vs. Public Education: What is better?

**Chair: Dr. Henry Chan**

**Chair: Dr. Konrad Czynski**

• **CMU 204**

**Session 1**

1:00 p.m.	3	A Prairie Home Companion and ED 310 Social Foundations of Education: Student Voices Through Poetry and Stories
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**Session 2**

2:30 p.m.	168	Discipline and Punish: The Arthur Murray Method
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**Chair: Dr. Judith Strong**

**Chair: Dr. Shawn Ginther**

• **CMU 205**

**Session 1**

1:00 p.m.	68	The Role of Phenylephrine in the Formation of Stress Fibers in Chinese Hamster Lung Fibroblasts
1:20 p.m.	51	Inhibition of MAPK Activity by Okadaic Acid on Microtubules in Sea Urchin Eggs
1:40 p.m.	149	Gender Differences in Spatial Task Performance
2:00 p.m.	133	Manure-the Next Energy Resource

**Session 2**

2:30 p.m.	49	Parent-Child Communication Program: Case Study 4
2:50 p.m.	72	ERK-mediated Activation of the Na <sup>+</sup> -H <sup>+</sup> Exchanger in Chinese Hamster Lung Fibroblasts is Dependent Upon Phospholipase C $\beta$ .
3:10 p.m.	125	The Sibley Expedition of 1863
3:30 p.m.	130	Wal-Mart vs. Small Town Industry

**Chair: Dr. James Harley**

**Chair: Tim Herms**

• **CMU 207**

**Session 1**

1:00 p.m.	156	Continuity of Care in Assisted Living Facilities
1:20 p.m.	142	An Analysis of Prostitution: The Diverse Views of Legalization
1:40 p.m.	1	Divorce
2:00 p.m.	111	Category-Specific Naming in Normal Subjects: Implications for Diagnosis of Dementia of the Alzheimer Type

**Session 2**

2:30 p.m.	15	Women In Nazi Germany: A Study of the Past, Present, and Future Historical Research
2:50 p.m.	6	A Hunter Speaks on Gun Control
3:10 p.m.	8	Ethnic Conflict in Japan: Korean Minority in Japan
3:30 p.m.	10	Wigs and Hairstyles in the Theatre

**Chair: Diane Wolter**

**Chair: Dr. Tracy Scholl**

## • CMU 208

### Session 1

- 1:00 p.m. 39 The Impact of Epidemic Diseases on the Conquest of the Inca and Aztec Empires by the Spanish Conquistadors
- 1:20 p.m. 16 Human Rights: Who do they belong to?
- 1:50 p.m. 146 Prairie Planting Partnerships

### Session 2

- 2:30 p.m. 57 What Would You Ever Need With Two Record Players? (Or the Vinyl Frontier)
- 2:50 p.m. 59 Solid State NMR spectrometer
- 3:10 p.m. 38 Do you have the perfect family?
- 3:30 p.m. 18 Hatch's Battalion

**Chair: Dr. Bette Midgarden**

**Chair: Dr. Jan Fiola**

## • CMU 214

### Session 1

- 1:00 p.m. 84 Who Needs Calculators: Let's Use our Heads!
- 1:20 p.m. 139 The Commedia dell'arte
- 1:40 p.m. 11 Justice Thurgood Marshall
- 2:00 p.m. 154 Ethics and International Relations: The Question of the Compatibility of War and Morality -- Can War Be Morally Justified?

### Session 2

- 2:30 p.m. 67 Minnesota's Budget Crisis: A Taxing Political Problem
- 3:10 p.m. 60 The Role of the RhoA Dependent Kinase ROCK on ERK Activation
- 3:30 p.m. 83 Fluctuations in the Earth's Magnetic Field

**Chair: Dr. Gary Nickell**

**Chair: Dr. Deborah White**

## • CMU 216

### Session 1

- 1:00 p.m. 144 Exploring the World Using Protozoa: experience a standards-based high school science curricula

### Session 2

- 2:30 p.m. 14 Understanding the Power of Rhetoric in Society

**Chair: Dr. Cliff Schuette**

**Chair: Dr. Bruce Roberts**

## • CMU 218

### Session 1

- 1:00 p.m. 102 MSUM Forensics Showcase: Interpretation of Literature

### Session 2

- 2:30 p.m. 101 MSUM Forensics Showcase: Public Speaking

**Chair: Dr. David Olday**

**Chair: Dr. David Crockett**

## • CMU 227

### Session 1

- 1:00 p.m. 50 A Molecular Rod with pH Regulated Length
- 1:20 p.m. 137 The Use of Erotica Instead of Pornography to Socialize Our Children
- 1:40 p.m. 132 Domestic Abuse and Social Class: An Unhealthy Relationship
- 2:00 p.m. 155 Analysis of the City of Moorhead's Fire Rating

### Session 2

- 2:30 p.m. 117 An Examination of the Influence of Race on Adoption Decisions.
- 2:50 p.m. 96 Does Gender Influence MSUM Student Perception of "Date Rape?"
- 3:10 p.m. 97 The Conflict in Sierra Leone, Africa
- 3:30 p.m. 115 All By Myself: Self-Written and Performed Theatrical Work

**Chair: Dr. Tim Borches**

**Chair: Barbara Rath**



## • Kise Line "D"

### Session 1

1:00 p.m.	140	Music Therapy and its Effect on Children with Disabilities
1:20 p.m.	121	Issues Concerning Mentally Handicapped Individuals
1:40 p.m.	148	Holocaust Participators, Resisters and those who deny it
2:00 p.m.	120	Gender and Women's roles in the Holocaust

### Session 2

2:30 p.m.	160	Differential ERK Activation in Chinese Hamster Lung (CCL39) Fibroblasts by Primary Alcohols and Dominant-Negative MEK
2:50 p.m.	166	Set design and the Model Building process
3:10 p.m.	167	History of Old Georgetown: The True Survivor
3:30 p.m.	165	Is God a Philosopher?

**Chair: Michael Wilde**

**Chair: Dr. Willie Hellford**

## • Underground

### Session 1

1:00 p.m.	79	The Illusion of Disillusionment in Joyce's "Araby"
1:20 p.m.	85	Atmospheric Turbulence and the Darkening Sky: A Forecast into Chandler's Emotional Upset in Joyce's "A Little Cloud"
1:40 p.m.	77	Time and Salvation in William Faulkner's <i>The Sound and the Fury</i>
2:00 p.m.	81	The Inversion of Biblical Tradition in William Faulkner's <i>The Sound and the Fury</i>

### Session 2

2:30 p.m.	116	Benjy's Section: Told by an Idiot, Signifying Everything
2:50 p.m.	150	Boll Weevils, Watermelons, and the Whirlwind: Jason Compson's Story as a Retelling of the Book of Job in Faulkner's <i>Sound and the Fury</i> .
3:10 p.m.	131	The Question of Character: A Comparison of Francis Beaumont's Parodying Edmund Spenser's Red Cross Knight in "The Knight of the Burning Pestle"

**Chair: Greg Stutes**

**Chair: Dr. Olivia Melroe**

## • Main Lounge

### Session 1

1:00 p.m.	44	The Relationship Between Alarm Cues and the Approach of a Visual Predator in a Prey Species
1:00 p.m.	29	Effects of Nitrogen Fertilizer Deficiency on Photosynthetic Performance of Corn
1:00 p.m.	37	Polyamine-Mediated DNA Purification with the Compaction Agent, AD010835
1:00 p.m.	27	Effect of reduced light during growth on photosynthesis potential in corn leaves
1:00 p.m.	24	Effect of short term UV light exposure on photosynthesis in isolated spinach chloroplasts
1:00 p.m.	22	Christopher Columbus as a Capitalist, as a Missionary, and as a Failure
1:00 p.m.	46	RhoA Activation by Phenylephrine is Essential for the Regulation of ERK, NHE1, and Stress Fiber Formation in CCL39 Fibroblasts.
1:00 p.m.	52	Changes in MAPK Activity During Fertilization
1:00 p.m.	13	On-Line Economics Dictionary
1:00 p.m.	4	Does Gender Determine How Likely you will be Hired as a Professor at MSUM?
1:00 p.m.	99	Demonstration of DNA damage using the CometAssay
1:00 p.m.	61	Patterns of Family Alcoholism
1:00 p.m.	19	Adjuvant Activity of Mutated <i>S. aureus Enterotoxin C</i> Protein in Balb/c Mice
1:00 p.m.	73	Parent-Child Communication Program: Case Study 7
1:00 p.m.	94	Comparison of population characteristics and morphological features of painted turtles from two sloughs in western Minnesota
1:00 p.m.	54	Cell Cycle Coordinated Mitochondrial Dynamics
1:00 p.m.	58	Euthanasia vs. Religion
1:00 p.m.	48	Effects of Safe Zone training on Peoples' Perception of GLBT Issues

## Session 2

- 2:30 p.m. 62 Creating Knockout Constructs in Yeast
- 2:30 p.m. 161  $\alpha$  Adrenergic Specific Signaling in Chinese Hamster Lung (CCL39) Fibroblasts
- 2:30 p.m. 9 Nocturnal Assessment of Predation by Zebra danios ( )
- 2:30 p.m. 75 Assessment of the Impact of Human Development on the Biotic Integrity of Lotic Systems in the Lake Agassiz Plain Ecoregion
- 2:30 p.m. 74 Parent-Child Communication Program: Case Study 2
- 2:30 p.m. 127 Mapping Activity Variations for Ru2O3 in Lunar Volcanic Green Glass Analogs Using Differential Pulse Voltammetry
- 2:30 p.m. 124 Magnetic Susceptibility for Understanding Prehistoric Earthworks
- 2:30 p.m. 123 Investigation of Drift in Down-hole Geophysical Instrumentation
- 2:30 p.m. 122 Effect of Photorespiration Metabolites on Photosynthesis in Isolated Sinach Chloroplasts
- 2:30 p.m. 25 Effects of reduced light during growth on photosynthesis potential in isolated chloroplasts
- 2:30 p.m. 65 Interacting Dark Matter in Galaxies
- 2:30 p.m. 47 Differences in Na<sup>+</sup>/H<sup>+</sup> Activation in Chinese Hamster Lung (CCL39) Fibroblasts by Lysophosphatidic Acid (LPA) and Phenylephrine (PE)
- 2:30 p.m. 110 Attitudes and Perceptions Toward the Elderly and Self-Aging
- 2:30 p.m. 108 Reliability of Eyewitness Testimony: The Influence of Race and Milieu on Perceptual Accuracy
- 2:30 p.m. 113 The Effect of Ration on Club Cell Proliferation in Darters
- 2:30 p.m. 95 MSUM Student Views on the Smoking Ban
- 2:30 p.m. 112 Color Clothing Preferences

## Session 3

- 3:50 p.m. 109 Sex differences in the use of color on mental rotations tasks
- 3:50 p.m. 138 The Affect of Frequency Contours and Emotionality on individuals Preferences of Music
- 3:50 p.m. 162 The Role of Phenylephrine in the Formation of Stress Fibers in Chinese Hamster Lung Fibroblasts
- 3:50 p.m. 141 International Stock Portfolio Diversification
- 3:50 p.m. 78 The Effects of Citric Acid Cycle Regulators on the Interactions Between Citrate Synthase and Malate Dehydrogenase
- 3:50 p.m. 135 Noninvasive genotyping of prairie dogs using hair samples
- 3:50 p.m. 63 Differential ERK Activation in Chinese Hamster Lung (CCL39) Fibroblasts by Primary Alcohols and Dominant-Negative MEK
- 3:50 p.m. 151 Disturbance cues in an adult amphibian: *Xenopus laevis*
- 3:50 p.m. 152 Bison (bison bison) calf production and population structure in Theodore Roosevelt National Park in the North Dakota Badlands
- 3:50 p.m. 147 Can Implicit Bias Be Influenced?
- 3:50 p.m. 158 The Role of the RhoA Dependent Kinase ROCK on ERK Activation
- 3:50 p.m. 26 Effect of short term UV light on photosynthesis in spinach leaves
- 3:50 p.m. 69 Effect of Alarm Cues on Visual Cues in Glow Light Tetras
- 3:50 p.m. 107 Differences among Gender's Reactions to Stressful Traumatic Events
- 3:50 p.m. 164 ERK-mediated Activation of the Na<sup>+</sup>-H<sup>+</sup> Exchanger in Chinese Hamster Lung Fibroblasts is Dependent Upon Phospholipase C $\beta$
- 3:50 p.m. 159 Defining a Role for the Arp2/3 Complex in Mitochondrial Morphology and Inheritance
- 3:50 p.m. 163 The Activation of PKC $\alpha$  is Required for the Phenylephrine-induced Activation of the Na<sup>+</sup>-H<sup>+</sup> Exchanger in Chinese Hamster Lung Cells, CCL39
- 3:50 p.m. 33 Progress Towards Enhancing the Survival Rate of Hatchery-Reared Walleye
- 3:50 p.m. 129 The Effects of Expert Celebrity Endorsers on Consumer Attitudes
- 3:50 p.m. 53 Temperature Studies of the Intramolecular Hydroamination Reaction
- 3:50 p.m. 82 Ionospheric Disturbances
- 3:50 p.m. 134 The Phosphorylation of FKHL1, After Exposure to UV Radiation
- 3:50 p.m. 76 Preparation of 1-Bromo-2-Catecholborylethene for use in Boron Neutron Capture Therapy
- 3:50 p.m. 106 Diffusion Activation Energy and Entropy of NiO Silicate Melts as a Window into Silicate Melt Structures
- 3:50 p.m. 136 The African-American experience on predominately white college campuses
- 3:50 p.m. 119 Only the Lonely Know: The Effects of Observer's Loneliness on Perceptions of a Lonely Individual

# Alphabetical List Of Presenters

146	Vian Abdulhakim	Prairie Planting Partnerships	CMU 208	1:50 p.m.
26	Vian Abdulhakim	Effect of short term UV light on photosynthesis in spinach leaves	Main Lounge	3:50 p.m.
98	Alicia Abentroth	The Elderly and Depression	CMU 203	3:10 p.m.
116	Andrea Aberle	Benjy's Section: Told by an Idiot, Signifying Everything	Underground	2:30 p.m.
61	Donna Adam	Patterns of Family Alcoholism	Main Lounge	1:00 p.m.
139	Justin Akers	The Commedia dell'arte	CMU 214	1:20 p.m.
9	Shireen Alemadi	Nocturnal Assessment of Predation by Zebra danios ( <i>Brachydanio rerio</i> )	Main Lounge	2:30 p.m.
63	JaDean Anderson	Differential ERK Activation in Chinese Hamster Lung (CCL39) Fibroblasts by Primary Alcohols and Dominant-Negative MEK	Main Lounge	3:50 p.m.
160	JaDean Anderson	Differential ERK Activation in Chinese Hamster Lung (CCL39) Fibroblasts by Primary Alcohols and Dominant-Negative MEK	Kise Line "D"	2:30 p.m.
73	Heather Arneson	Parent-Child Communication Program: Case Study 7	Main Lounge	1:00 p.m.
77	Brandon Baker	Time and Salvation in William Faulkner's The Sound and the Fury	Underground	1:40 p.m.
3	Jacqueline Barber	A Prairie Home Companion and ED 310 Social Foundations of Education: Student Voices Through Poetry and Stories	CMU 204	1:00 p.m.
29	Holly Beimdiek	Effects of Nitrogen Fertilizer Deficiency on Photosynthetic Performance of Corn	Main Lounge	1:00 p.m.
29	Kelly Benson	Effects of Nitrogen Fertilizer Deficiency on Photosynthetic Performance of Corn	Main Lounge	1:00 p.m.
102	Carrie Bican	MSUM Forensics Showcase: Interpretation of Literature	CMU 218	1:00 p.m.
28	Carrie Bican	This is "Absurd": A Look at the History, Elements, Comments and Reactions of the Theatre of the Absurd	CMU 200A	3:10 p.m.
152	Heather Boe	Bison ( <i>bison bison</i> ) calf production and population structure in Theodore Roosevelt National Park in the North Dakota Badlands	Main Lounge	3:50 p.m.
122	Heather Boe	Effect of Photorespiration Metabolites on Photosynthesis in Isolated Sinach Chloroplasts	Main Lounge	2:30 p.m.
12	Kristin Bosch	Parent-Child Communication Program: Case Study 5	CMU 203	1:00 p.m.
152	Thomas Bovee	Bison ( <i>bison bison</i> ) calf production and population structure in Theodore Roosevelt National Park in the North Dakota Badlands	Main Lounge	3:50 p.m.
71	Heidi Boyum	The Activation of PKC $\alpha$ is Required for the Phenylephrine-induced Activation of the Na <sup>+</sup> -H <sup>+</sup> Exchanger in Chinese Hamster Lung Cells, CCL39	CMU 200D	2:50 p.m.
143	Nathan Brager	Hands-On Herpetology: experience a standards-based high school science curricula	CMU 121	1:00 p.m.
152	Michelle Bray	Bison ( <i>bison bison</i> ) calf production and population structure in Theodore Roosevelt National Park in the North Dakota Badlands	Main Lounge	3:50 p.m.
21	Jason Brown	DNA Vaccine Adjuvant Activity of Mutated <i>S. aureus</i> Enterotoxin C Encoding Plasmid in Balb/c Mice	CMU 200D	3:10 p.m.
19	Jason Brown	Adjuvant Activity of Mutated <i>S. aureus</i> Enterotoxin C Protein in Balb/c Mice	Main Lounge	1:00 p.m.
69	Jason Brown	Effect of Alarm Cues on Visual Cues in Glow Light Tetras	Main Lounge	3:50 p.m.
155	Daniel Buchholtz	Analysis of the City of Moorhead's Fire Rating	CMU 227	2:00 p.m.
103	Shannon Buck	Parent-Child Communication Program: Case Study 3	CMU 200D	2:00 p.m.
102	Amanda Calsbeek	MSUM Forensics Showcase: Interpretation of Literature	CMU 218	1:00 p.m.
101	Amanda Calsbeek	MSUM Forensics Showcase: Public Speaking	CMU 218	2:30 p.m.

Numbers correspond with abstract listings beginning on page 26

#	Name	Title	Room	Time
14	Colee Campbell	Understanding the Power of Rhetoric in Society	CMU 216	2:30 p.m.
95	Doreen Cerkowniak	MSUM Student Views on the Smoking Ban	Main Lounge	2:30 p.m.
38	Jessica Childress	Do you have the perfect family?	CMU 208	3:10 p.m.
67	Mass Communications Class	Minnesota's Budget Crisis: A Taxing Political Problem	CMU 214	2:30 p.m.
13	Economics Class	On-Line Economics Dictionary	Main Lounge	1:00 p.m.
66	Genny Clausen	$\alpha$ Adrenergic Specific Signaling in Chinese Hamster Lung (CCL39) Fibroblasts	CMU 200A	1:20 p.m.
161	Genny Clausen	$\alpha$ Adrenergic Specific Signaling in Chinese Hamster Lung (CCL39) Fibroblasts	Main Lounge	2:30 p.m.
113	Amber Corwin	The Effect of Ration on Club Cell Proliferation in Darters	Main Lounge	2:30 p.m.
49	Megan Crowsten	Parent-Child Communication Program: Case Study 4	CMU 205	2:30 p.m.
5	Chris Daggett	The Proliferation of Light Weapons in Africa and Their Exacerbating Role in Conflict: Sierra Leone, Liberia, and Angola	CMU 101	1:20 p.m.
120	William Dahlin	Gender and Women's roles in the Holocaust	Kise Line "D"	2:00 p.m.
149	Trisha Daigle	Gender Differences in Spatial Task Performance	CMU 205	1:40 p.m.
162	Jenny Dale	The Role of Phenylephrine in the Formation of Stress Fibers in Chinese Hamster Lung Fibroblasts	Main Lounge	3:50 p.m.
28	Rachel Deibert	This is "Absurd": A Look at the History, Elements, Comments and Reactions of the Theatre of the Absurd	CMU 200A	3:10 p.m.
102	Rachel Deibert	MSUM Forensics Showcase: Interpretation of Literature	CMU 218	1:00 p.m.
24	Jim Denker	Effect of short term UV light exposure on photosynthesis in isolated spinach chloroplasts	Main Lounge	1:00 p.m.
110	Lindsay Doran	Attitudes and Perceptions Toward the Elderly and Self-Aging	Main Lounge	2:30 p.m.
3	Jim Duberowski	A Prairie Home Companion and ED 310 Social Foundations of Education: Student Voices Through Poetry and Stories	CMU 204	1:00 p.m.
128	Vanessa Eaton	NAFTA- Its benefits and hardships to Mexican society.	CMU 200A	2:50 p.m.
123	Cameon Eisenzimmer	Investigation of Drift in Down-hole Geophysical Instrumentation	Main Lounge	2:30 p.m.
138	Anthony Emanuele	The Affect of Frequency Contours and Emotionality on individuals Preferences of Music	Main Lounge	3:50 p.m.
57	Matt Engelstad	What Would You Ever Need With Two Record Players? (Or the Vinyl Frontier)	CMU 208	2:30 p.m.
96	Deborah Erickson	Does Gender Influence MSUM Student Perception of "Date Rape?"	CMU 227	2:50 p.m.
51	Mario Fernandez	Inhibition of MAPK Activity by Okadaic Acid on Microtubules in Sea Urchin Eggs	CMU 205	1:20 p.m.
73	Andrea Fischer	Parent-Child Communication Program: Case Study 7	Main Lounge	1:00 p.m.
49	Amanda Flugstad	Parent-Child Communication Program: Case Study 4	CMU 205	2:30 p.m.
123	Aaron Fogel	Investigation of Drift in Down-hole Geophysical Instrumentation	Main Lounge	2:30 p.m.
111	Darcy Frisinger	Category-Specific Naming in Normal Subjects: Implications for Diagnosis of Dementia of the Alzheimer Type	CMU 207	2:00 p.m.
74	April Frolek	Parent-Child Communication Program: Case Study 2	Main Lounge	2:30 p.m.
61	Kirsten Fuglestad	Patterns of Family Alcoholism	Main Lounge	1:00 p.m.
46	Melanie Funfar	RhoA Activation by Phenylephrine is Essential for the Regulation of ERK, NHE1, and Stress Fiber Formation in CCL39 Fibroblasts	Main Lounge	1:00 p.m.
47	Melanie Funfar	Differences in Na <sup>+</sup> /H <sup>+</sup> Activation in Chinese Hamster Lung (CCL39) Fibroblasts by Lysophosphatidic Acid (LPA) and Phenylephrine (PE)	Main Lounge	2:30 p.m.

#	Name	Title	Room	Time
143	Katy Garza-Bair	Hands-On Herpetology: experience a standards-based high school science curricula	CMU 12	1:00 p.m.
95	Dawn Gehrke	MSUM Student Views on the Smoking Ban	Main Lounge	2:30 p.m.
145	Christina Gerdes	Human Genetic Variation: experience a standards-based high school science curricula	CMU 121	2:30 p.m.
99	Jeremy Grabinger	Demonstration of DNA damage using the CometAssay	Main Lounge	1:00 p.m.
32	Eric Graff	Cost/Benefit Analysis of Moorhead Wind Power Project	CMU 101	3:30 p.m.
7	Jessica Graving	Parent-Child Communication Program: Case Study 6	CMU 200A	2:30 p.m.
151	Jill Greenley	Disturbance cues in an adult amphibian: <i>Xenopus laevis</i>	Main Lounge	3:50 p.m.
165	James Grindeland	Is God a Philosopher?	Kise Line "D"	3:30 p.m.
146	Alicia Gulbranson	Prairie Planting Partnerships	CMU 208	1:50 p.m.
144	Alicia Gulbranson	Exploring the World Using Protozoa: experience a standards-based high school science curricula	CMU 216	1:00 p.m.
115	Reed Halvorson	All By Myself: Self-Written and Performed Theatrical Work	CMU 227	3:30 p.m.
102	Reed Halvorson	MSUM Forensics Showcase: Interpretation of Literature	CMU 218	1:00 p.m.
75	Matt Hammes	Assessment of the Impact of Human Development on the Biotic Integrity of Lotic Systems in the Lake Agassiz Plain Ecoregion	Main Lounge	2:30 p.m.
37	Lisa Hansen	Polyamine-Mediated DNA Purification with the Compaction Agent, AD010835	Main Lounge	1:00 p.m.
76	Lisa Hansen	Preparation of 1-Bromo-2-Catecholborylethene for use in Boron Neutron Capture Therapy	Main Lounge	3:50 p.m.
133	Alicia Hanson	Manure-the Next Energy Resource	CMU 205	2:00 p.m.
101	Alicia Hanson	MSUM Forensics Showcase: Public Speaking	CMU 218	2:30 p.m.
102	Jennifer Hasbargen	MSUM Forensics Showcase: Interpretation of Literature	CMU 218	1:00 p.m.
3	Eric Haverland	A Prairie Home Companion and ED 310 Social Foundations of Education: Student Voices Through Poetry and Stories	CMU 204	1:00 p.m.
78	Jarrold Heck	The Effects of Citric Acid Cycle Regulators on the Interactions Between Citrate Synthase and Malate Dehydrogenase	Main Lounge	3:50 p.m.
162	Jessica Heck	The Role of Phenylephrine in the Formation of Stress Fibers in Chinese Hamster Lung Fibroblasts	Main Lounge	3:50 p.m.
97	Bill Heinis	The Conflict in Sierra Leone, Africa	CMU 227	3:10 p.m.
117	Natalie Henes	An Examination of the Influence of Race on Adoption Decisions	CMU 227	2:30 p.m.
130	Jennifer Hensel	Wal-Mart vs. Small Town Industry	CMU 205	3:30 p.m.
101	Jennifer Hoepfner	MSUM Forensics Showcase: Public Speaking	CMU 218	2:30 p.m.
21	Damian Holznagel	DNA Vaccine Adjuvant Activity of Mutated <i>S. aureus Enterotoxin C</i> Encoding Plasmid in Balb/c Mice	CMU 200D	3:10 p.m.
159	Damian Holznagel	Defining a Role for the Arp2/3 Complex in Mitochondrial Morphology and Inheritance	Main Lounge	3:50 p.m.
19	Damian Holznagel	Adjuvant Activity of Mutated <i>S. aureus Enterotoxin C</i> Protein in Balb/c Mice	Main Lounge	1:00 p.m.
20	Damian Holznagel	Defining a Role for the Arp2/3 Complex in Mitochondrial Morphology and Inheritance	CMU 101	2:00 p.m.
80	Matthew Holzwarth	Building a Device to Test Human Skin Conductance During Functional Magnetic Resonance Imaging	CMU 203	1:20 p.m.
83	Cable Hren	Fluctuations in the Earth's Magnetic Field	CMU 214	3:30 p.m.
151	Aaron Hutcheson	Disturbance cues in an adult amphibian: <i>Xenopus laevis</i>	Main Lounge	3:50 p.m.
61	Amber Hvezda	Patterns of Family Alcoholism	Main Lounge	1:00 p.m.

Numbers correspond with abstract listings beginning on page 26

#	Name	Title	Room	Time
17	Melissa Iverson	Normalization of Violence Against Women in Maxim Magazine	CMU 203	1:40 p.m.
3	Lori Jacobs	A Prairie Home Companion and ED 310 Social Foundations of Education: Student Voices Through Poetry and Stories	CMU 204	1:00 p.m.
65	Sara Jarolimek	Interacting Dark Matter in Galaxies	Main Lounge	2:30 p.m.
147	Mark Jesinoski	Can Implicit Bias Be Influenced?	Main Lounge	3:50 p.m.
74	Amy Johanson	Parent-Child Communication Program: Case Study 2	Main Lounge	2:30 p.m.
54	Heidi Jo Johnson	Cell Cycle Coordinated Mitochondrial Dynamics	Main Lounge	1:00 p.m.
3	Jenia Johnson	A Prairie Home Companion and ED 310 Social Foundations of Education: Student Voices Through Poetry and Stories	CMU 204	1:00 p.m.
98	Marisa Johnson	The Elderly and Depression	CMU 203	3:10 p.m.
76	Michelle Johnson	Preparation of 1-Bromo-2-Catecholborylethene for use in Boron Neutron Capture Therapy	Main Lounge	3:50 p.m.
37	Michelle Johnson	Polyamine-Mediated DNA Purification with the Compaction Agent, AD010835	Main Lounge	1:00 p.m.
81	Jessie Johnson	The Inversion of Biblical Tradition in William Faulkner's <i>The Sound and the Fury</i>	Underground	2:00 p.m.
142	Elizabeth Johnson	An Analysis of Prostitution: The Diverse Views of Legalization	CMU 207	1:20 p.m.
86	David Jons	The Evolution of Mexican Cinema	CMU 101	1:40 p.m.
27	Chris Joyce	Effect of reduced light during growth on photosynthesis potential in corn leaves	Main Lounge	1:00 p.m.
7	Katherine Kemp	Parent-Child Communication Program: Case Study 6	CMU 200A	2:30 p.m.
154	Kylene Kinnischtzke	Ethics and International Relations: The Question of the Compatibility of War and Morality -- Can War Be Morally Justified?	CMU 214	2:00 p.m.
52	Molly Kintop	Changes in MAPK Activity During Fertilization	Main Lounge	1:00 p.m.
53	Justin Klitzke	Temperature Studies of the Intramolecular Hydroamination Reaction	Main Lounge	3:50 p.m.
21	Justin Klitzke	DNA Vaccine Adjuvant Activity of Mutated <i>S. aureus Enterotoxin C</i> Encoding Plasmid in Balb/c Mice	CMU 200D	3:10 p.m.
19	Justin Klitzke	Adjuvant Activity of Mutated <i>S. aureus Enterotoxin C</i> Protein in Balb/c Mice	Main Lounge	1:00 p.m.
139	Jared Kolles	The Commedia dell'arte	CMU 214	1:20 p.m.
163	Nichole Korpi	The Activation of PKCa is Required for the Phenylephrine-induced Activation of the Na <sup>+</sup> -H <sup>+</sup> Exchanger in Chinese Hamster Lung Cells, CCL39	Main Lounge	3:50 p.m.
46	Nichole Korpi	RhoA Activation by Phenylephrine is Essential for the Regulation of ERK, NHE1, and Stress Fiber Formation in CCL39 Fibroblasts	Main Lounge	1:00 p.m.
47	Nichole Korpi	Differences in Na <sup>+</sup> /H <sup>+</sup> Activation in Chinese Hamster Lung (CCL39) Fibroblasts by Lysophosphatidic Acid (LPA) and Phenylephrine (PE).	Main Lounge	2:30 p.m.
8	Asami Koshiyama	Ethnic Conflict in Japan: Korean Minority in Japan	CMU 207	3:10 p.m.
11	Darren Krein	Justice Thurgood Marshall	CMU 214	1:40 p.m.
24	Jason Krumwiede	Effect of short term UV light exposure on photosynthesis in isolated spinach chloroplasts	Main Lounge	1:00 p.m.
125	Susan Kudelka	The Sibley Expedition of 1863	CMU 205	3:10 p.m.
107	Amber Kuznia	Differences among Gender's Reactions to Stressful Traumatic Events	Main Lounge	3:50 p.m.
66	Jenny Lang	$\alpha$ Adrenergic Specific Signaling in Chinese Hamster Lung (CCL39) Fibroblasts	CMU 200A	1:20 p.m.
161	Jenny Lang	$\alpha$ Adrenergic Specific Signaling in Chinese Hamster Lung (CCL39) Fibroblasts	Main Lounge	2:30 p.m.

Numbers correspond with abstract listings beginning on page 26

#	Name	Title	Room	Time
99	Sara Larson	Demonstration of DNA damage using the CometAssay	Main Lounge	1:00 p.m.
148	Jody Larson	Holocaust Participators, Resisters and those who deny it	Kise Line "D"	1:40 p.m.
144	Brett Lehner	Exploring the World Using Protozoa: experience a standards-based high school science curricula	CMU 216	1:00 p.m.
25	Brett Lehner	Effects of reduced light during growth on photosynthesis potential in isolated chloroplasts	Main Lounge	2:30 p.m.
14	Michelle Lehrke	Understanding the Power of Rhetoric in Society	CMU 216	2:30 p.m.
108	Fredrik Leinfelt	Reliability of Eyewitness Testimony: The Influence of Race and Milieu on Perceptual Accuracy	Main Lounge	2:30 p.m.
145	Carrie Leopold	Human Genetic Variation: experience a standards-based high school science curricula	CMU 121	2:30 p.m.
140	Heather Letcher	Music Therapy and its Effect on Children with Disabilities	Kise Line "D"	1:00 p.m.
156	Joyce Linnerud Fowler	Continuity of Care in Assisted Living Facilities	CMU 207	1:00 p.m.
50	Larry Louisiana	A Molecular Rod with pH Regulated Length	CMU 227	1:00 p.m.
124	Kelsey Lowe	Magnetic Susceptibility for Understanding Prehistoric Earthworks	Main Lounge	2:30 p.m.
119	September Luitjens	Only the Lonely Know: The Effects of Observer's Loneliness on Perceptions of a Lonely Individual	Main Lounge	3:50 p.m.
146	Bethany Lundgren	Prairie Planting Partnerships	CMU 208	1:50 p.m.
143	Tessa Lundrigan	Hands-On Herpetology: experience a standards-based high school science curricula	CMU 121	1:00 p.m.
127	Kathleen Malum	Mapping Activity Variations for Ru2O3 in Lunar Volcanic Green Glass Analogs Using Differential Pulse Voltammetry	Main Lounge	2:30 p.m.
4	Jannae Mauch	Does Gender Determine How Likely you will be Hired as a Professor at MSUM?	Main Lounge	1:00 p.m.
60	Andrew McCoy	The Role of the RhoA Dependent Kinase ROCK on ERK Activation	CMU 214	3:10 p.m.
158	Andrew McCoy	The Role of the RhoA Dependent Kinase ROCK on ERK Activation	Main Lounge	3:50 p.m.
47	Andrew McCoy	Differences in Na <sup>+</sup> /H <sup>+</sup> Activation in Chinese Hamster Lung (CCL39) Fibroblasts by Lysophosphatidic Acid (LPA) and Phenylephrine (PE)	Main Lounge	2:30 p.m.
54	Austin McCoy	Cell Cycle Coordinated Mitochondrial Dynamics	Main Lounge	1:00 p.m.
12	Lena McDowall	Parent-Child Communication Program: Case Study 5	CMU 203	1:00 p.m.
135	Daniel McEwen	Noninvasive genotyping of prairie dogs using hair samples	Main Lounge	3:50 p.m.
103	Joy McKenzie	Parent-Child Communication Program: Case Study 3	CMU 200D	2:00 p.m.
59	Brian Meland	Solid State NMR spectrometer	CMU 208	2:50 p.m.
3	Erin Mentele	A Prairie Home Companion and ED 310 Social Foundations of Education: Student Voices Through Poetry and Stories	CMU 204	1:00 p.m.
72	Ali Metcalf	ERK-mediated Activation of the Na <sup>+</sup> -H <sup>+</sup> Exchanger in Chinese Hamster Lung Fibroblasts is Dependent Upon Phospholipase C $\beta$	CMU 205	2:50 p.m.
114	Kara Miller	Preference Between Two Black & White Photographs: Gestalt Laws in Composition and Perception	CMU 200D	1:00 p.m.
167	Eric Mimnaugh	History of Old Georgetown: The True Survivor	Kise Line "D"	3:10 p.m.
100	Lisa Moon	The Perception/Misperception of the Perfect Body	CMU 101	2:30 p.m.
63	Brad Moran	Differential ERK Activation in Chinese Hamster Lung (CCL39) Fibroblasts by Primary Alcohols and Dominant-Negative MEK	Main Lounge	3:50 p.m.
160	Brad Moran	Differential ERK Activation in Chinese Hamster Lung (CCL39) Fibroblasts by Primary Alcohols and Dominant-Negative MEK	Kise Line "D"	2:30 p.m.
27	Tom Murphy	Effect of reduced light during growth on photosynthesis potential in corn leaves	Main Lounge	1:00 p.m.

*Numbers correspond with abstract listings beginning on page 26*

#	Name	Title	Room	Time
78	Anna Naig	The Effects of Citric Acid Cycle Regulators on the Interactions Between Citrate Synthase and Malate Dehydrogenase	Main Lounge	3:50 p.m.
62	Anna Naig	Creating Knockout Constructs in Yeast	Main Lounge	2:30 p.m.
22	Jessica Nelson	Christopher Columbus as a Capitalist, as a Missionary, and as a Failure	Main Lounge	1:00 p.m.
150	Jeff Nelson	Boll Weevils, Watermelons, and the Whirlwind: Jason Compson's Story as a Retelling of the Book of Job in Faulkner's Sound and the Fury	Underground	2:50 p.m.
137	Emily Nordwall	The Use of Erotica Instead of Pornography to Socialize Our Children	CMU 227	1:20 p.m.
88	Jessica Nuffer	Parent-Child Communication Program: Case Study 1	CMU 101	2:50 p.m.
6	Mike Obach	A Hunter Speaks on Gun Control	CMU 207	2:50 p.m.
84	Matt Oberlander	Who Needs Calculators: Let's Use our Heads!	CMU 214	1:00 p.m.
164	Sarah Olmschenk	ERK-mediated Activation of the Na <sup>+</sup> -H <sup>+</sup> Exchanger in Chinese Hamster Lung Fibroblasts is Dependent Upon Phospholipase C $\beta$	Main Lounge	3:50 p.m.
145	Christine Olson	Human Genetic Variation: experience a standards-based high school science curricula	CMU 121	2:30 p.m.
112	Mike OMalley	Color Clothing Preferences	Main Lounge	2:30 p.m.
15	Andrea Paulson	Women In Nazi Germany: A Study of the Past, Present, and Future Historical Research	CMU 207	2:30 p.m.
52	Stephanie Peasley	Changes in MAPK Activity During Fertilization	Main Lounge	1:00 p.m.
131	Rhonda Portmann	The Question of Character: A Comparison of Francis Beaumont's Parodying Edmund Spenser's Red Cross Knight in "The Knight of the Burning Pestle"	Underground	3:10 p.m.
104	Danny Pyatt	The Economics of HMO's	CMU 101	1:00 p.m.
134	Christa Randklev	The Phosphorylation of FKHL1, After Exposure to UV Radiation	Main Lounge	3:50 p.m.
85	Krista Reiner	Atmospheric Turbulence and the Darkening Sky: A Forecast into Chandler's Emotional Upset in Joyce's "A Little Cloud"	Underground	1:20 p.m.
54	Jen Risan	Cell Cycle Coordinated Mitochondrial Dynamics	Main Lounge	1:00 p.m.
134	Shanna Rix	The Phosphorylation of FKHL1, After Exposure to UV Radiation	Main Lounge	3:50 p.m.
79	Jennifer Rudnick	The Illusion of Disillusionment in Joyce's "Araby"	Underground	1:00 p.m.
33	Mariya Rzaszutak	Progress Towards Enhancing the Survival Rate of Hatchery-Reared Walleye	Main Lounge	3:50 p.m.
82	Matthew Saarion	Ionospheric Disturbances	Main Lounge	3:50 p.m.
56	Alexandra Sapegina	Ukraine: New Accounting for the New Century	CMU 203	2:50 p.m.
106	Megan Sawarynski	Diffusion Activation Energy and Entropy of NiO Silicate Melts as a Window into Silicate Melt Structures	Main Lounge	3:50 p.m.
94	Joanna Schmit	Comparison of population characteristics and morphological features of painted turtles from two sloughs in western Minnesota	Main Lounge	1:00 p.m.
152	Joanna Schmit	Bison ( <i>bison bison</i> ) calf production and population structure in Theodore Roosevelt National Park in the North Dakota Badlands	Main Lounge	3:50 p.m.
109	Karissa Schmoll	Sex differences in the use of color on mental rotations tasks	Main Lounge	3:50 p.m.
136	Jen Schoenfish	The African-American experience on predominately white college campuses.	Main Lounge	3:50 p.m.
39	Dana Schouten	The Impact of Epidemic Diseases on the Conquest of the Inca and Aztec Empires by the Spanish Conquistadors	CMU 208	1:00 p.m.
107	Aletta Schultz	Differences among Gender's Reactions to Stressful Traumatic Events	Main Lounge	3:50 p.m.
129	Anne Sheldon	The Effects of Expert Celebrity Endorsers on Consumer Attitudes	Main Lounge	3:50 p.m.

Numbers correspond with abstract listings beginning on page 26



#	Name	Title	Room	Time
132	Stephanie Shoemaker	Domestic Abuse and Social Class: An Unhealthy Relationship	CMU 227	1:40 p.m.
68	Cheryl Sick	The Role of Phenylephrine in the Formation of Stress Fibers in Chinese Hamster Lung Fibroblasts	CMU 205	1:00 p.m.
146	Ava-Gaye Simms	Prairie Planting Partnerships	CMU 208	1:50 p.m.
84	Anthony Simonson	Who Needs Calculators: Let's Use our Heads!	CMU 214	1:00 p.m.
168	Joshua Smith	Discipline and Punish: The Arthur Murray Method	CMU 204	2:30 p.m.
1	Laura Speltz	Divorce	CMU 207	1:40 p.m.
36	Jessica Steinbach	Legal Ethics Meets The Movies	CMU 203	2:30 p.m.
23	Roxanne Stewart	Health and illness in developing countries	CMU 200D	1:40 p.m.
141	Miroslav Stoichev	International Stock Portfolio Diversification	Main Lounge	3:50 p.m.
121	Summer Stores	Issues Concerning Mentally Handicapped Individuals	Kise Line "D"	1:20 p.m.
95	Leanna Stowman	MSUM Student Views on the Smoking Ban	Main Lounge	2:30 p.m.
166	Sarah Swenson	Set design and the Model Building process	Kise Line "D"	2:50 p.m.
159	Aaron Sykes	Defining a Role for the Arp2/3 Complex in Mitochondrial Morphology and Inheritance	Main Lounge	3:50 p.m.
20	Aaron Sykes	Defining a Role for the Arp2/3 Complex in Mitochondrial Morphology and Inheritance	CMU 101	2:00 p.m.
21	Aaron Sykes	DNA Vaccine Adjuvant Activity of Mutated <i>S. aureus Enterotoxin C</i> Encoding Plasmid in Balb/c Mice	CMU 200D	3:10 p.m.
19	Aaron Sykes	Adjuvant Activity of Mutated <i>S. aureus Enterotoxin C</i> Protein in Balb/c Mice	Main Lounge	1:00 p.m.
48	Jamie Tate	Effects of Safe Zone training on Peoples Perception of GLBT Issues	Main Lounge	1:00 p.m.
88	Kelly Taylor	Parent-Child Communication Program: Case Study 1	CMU 101	2:50 p.m.
9	Travis Thiel	Nocturnal Assessment of Predation by Zebra danios ( <i>Brachydanio rerio</i> )	Main Lounge	2:30 p.m.
33	Travis Thiel	Progress Towards Enhancing the Survival Rate of Hatchery-Reared Walleye	Main Lounge	3:50 p.m.
94	Deanna Thompson	Comparison of population characteristics and morphological features of painted turtles from two sloughs in western Minnesota	Main Lounge	1:00 p.m.
64	Hillary Thronson	Differences in Na <sup>+</sup> /H <sup>+</sup> Activation in Chinese Hamster Lung (CCL39) Fibroblasts by Lysophosphatidic Acid (LPA) and Phenylephrine (PE)	CMU 101	3:10 p.m.
112	Melissa Truscinski	Color Clothing Preferences	Main Lounge	2:30 p.m.
157	Nina Tupy	Female Genital Mutilation: A Human Rights Abuse?	CMU 200A	1:40 p.m.
34	George Vinson	Racial Profiling in Law Enforcement	CMU 200A	1:00 p.m.
134	Julie Vogel	The Phosphorylation of FKHRL1, After Exposure to UV Radiation	Main Lounge	3:50 p.m.
158	Justin Voog	The Role of the RhoA Dependent Kinase ROCK on ERK Activation	Main Lounge	3:50 p.m.
60	Justin Voog	The Role of the RhoA Dependent Kinase ROCK on ERK Activation	CMU 214	3:10 p.m.
3	Kelly Wagner	A Prairie Home Companion and ED 310 Social Foundations of Education: Student Voices Through Poetry and Stories	CMU 204	1:00 p.m.
107	Janelle Wald	Differences among Gender's Reactions to Stressful Traumatic Events	Main Lounge	3:50 p.m.
14	Valerie Waldock	Understanding the Power of Rhetoric in Society	CMU 216	2:30 p.m.
101	Valerie Waldock	MSUM Forensics Showcase: Public Speaking	CMU 218	2:30 p.m.
96	JoAnn Walker	Does Gender Influence MSUM Student Perception of "Date Rape?"	CMU 227	2:50 p.m.
14	Meghan Watkin	Understanding the Power of Rhetoric in Society	CMU 216	2:30 p.m.
144	Jonathon Watkins	Exploring the World Using Protozoa: experience a standards-based high school science curricula	CMU 216	1:00 p.m.

Numbers correspond with abstract listings beginning on page 26

#	Name	Title	Room	Time
26	Jonathan Watkins	Effect of short term UV light on photosynthesis in spinach leaves	Main Lounge	3:50 p.m.
126	Jaime Wendlick	The Lolita Syndrome: The Media, the Sexualization of Children, and Pedophilia	CMU 200D	1:20 p.m.
18	Eric Wilkie	Hatch's Battalion	CMU 208	3:30 p.m.
10	Natasha Woitzel	Wigs and Hairstyles in the Theatre	CMU 207	3:30 p.m.
16	Tammie Yak	Human Rights: Who do they belong to?	CMU 208	1:20 p.m.
31	Nicole Zacher	Private vs. Public Education: What is better?	CMU 203	3:30 p.m.
98	Brandi Zahn	The Elderly and Depression	CMU 203	3:10 p.m.
94	Candice Zemlicka	Comparison of population characteristics and morphological features of painted turtles from two sloughs in western Minnesota	Main Lounge	1:00 p.m.

# Abstracts

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1

**Title:** Divorce

**Presenter(s):** Laura Speltz

**Department:** Sociology

**Advisor:** Janice Fiola

**Abstract:** This paper reviews some adverse effects divorce can have on children involved. Using secondary data and literature review, numerous effects including psychological, emotional and financial as well as other issues are examined. Varied viewpoints of the impact of divorce are outlined. The paper concludes with coping strategies for children.

3

**Title:** A Prairie Home Companion and ED 310 Social Foundations of Education: Student Voices Through Poetry and Stories

**Presenter(s):** Erin Mentele, Jacqueline Barber, Jenia Johnson, Kelly Wagner, Eric Haverland, Lori Jacobs, Jim Duberowski

**Department:** Foundations of Education

**Advisor:** Steve Grineski

**Abstract:** Students in Steve Grineski's Social Foundations of Education class complete a variety of projects to demonstrate their understanding of course objectives. Five students will share poetry and stories that demonstrates their understanding for the history of education and the role of computer instructional technology in K-12 schools.

4

**Title:** Does Gender Determine How Likely you will be Hired as a Professor at MSUM?

**Presenter(s):** Jannae Mauch

**Department:** Psychology

**Advisor:** Christine Smith

**Abstract:** This study sought to analyse the Minnesota State University Moorhead's equality using gender. This is a quantitative study where each department was analysed to see if the faculty was dominated by men or women. Correlations were also made between the type of department and by whom it was dominated.

5

**Title:** The Proliferation of Light Weapons in Africa and Their Exacerbating Role in Conflict: Sierra Leone, Liberia, and Angola

**Presenter(s):** Chris Daggett

**Department:** Political Science

**Advisor:** Andrew Conteh

**Abstract:** The presentation will examine the nature, sources of, and proliferation of light weapons in Africa by closely examining Sierra Leone, Liberia and Angola. There will be a focus on how light weapons have exacerbated the conflicts there. Possible options to remedy the problem will also be examined.

6

**Title:** A Hunter Speaks on Gun Control

**Presenter(s):** Mike Obach

**Department:** Speech Communication

**Advisor:** Theresa Carson

**Abstract:** I would like to give a persuasive speech on gun control. My view is that of a lifelong hunter and gun owner who believes that gun control is a necessary requirement to a safe and free society. I will also speak against the NRA for using unfair and negative scare tactics to influence their extremist view on the American public. I will also gladly respond to any questions and feedback for as long as possible.

7

**Title:** Parent-Child Communication Program: Case Study 6

**Presenter(s):** Katherine Kemp, Jessica Graving

**Department:** Speech/Language/Hearing Science

**Advisor:** Louis De Maio

**Abstract:** This study is one of seven case studies that analyzed the effects of the Parent-Child Communication Program. We will conduct a Power Point presentation of our results and interpretation of a mother's initiation and response patterns and use of questions before and after the PCCP training.

8

**Title:** Ethnic Conflict in Japan: Korean Minority in Japan

**Presenter(s):** Asami Koshiyama

**Department:** Political Science

**Advisor:** Andrew Conteh

**Abstract:** In this presentation, ethnic conflict between Koreans and Japanese in Japan society is discussed. What the conflict is between them, and what the cause of it is will be discussed through reviewing (1) the presence of Korean residents in Japan today, (2) the history of Korea-Japan relationship from 1910 to present, (3) legal status of Korean residents in Japan; the laws and its changes, and (4) issues and existing conflicts of Koreans in Japan. Some findings about the cause of the conflict are shown. Resolutions for the long-term conflict, and the future relationships between South Korea, North Korea, and Japan are suggested.

9

**Title:** Nocturnal Assessment of Predation by Zebra danios (Brachydanio rerio)

**Presenter(s):** Travis Thiel, Shireen Alemadi

**Department:** Biology

**Advisor:** Brian Wisenden

**Abstract:** Nocturnal antipredator behavior of zebra danios (Brachydanio rerio) was studied to ascertain information about nocturnal behavior in response to alarm substance and the odor of pike (Esox lucius). Northern pike are not natural predators of the zebra danio, which makes the pike a good test subject since their chemical cues are completely novel to the zebra danio. Testing was conducted using a camcorder with night vision to detect the movement according to a quantifiable grid system. Each trial tested one pair of fish. Two aspects of antipredator behavior were measured: vertical distribution and horizontal activity. On day 1, fish were conditioned with a combined cue of alarm substance and pike odor or water and pike odor. On Day 2, the same fish were retested with pike odor only. On Day 1, there was no significant change in vertical distribution or horizontal activity of fish tested with alarm substance/pike odor or water/pike odor. On Day 2, fish conditioned with alarm substance/pike odor did not significantly increase time near the bottom when re-exposed to pike odor but they did show a significant increase in horizontal activity relative to fish that were previously conditioned with water and pike odor. These data indicate that zebra danios learn to recognize the chemical identity of nocturnally active predators even during times of their own inactivity.

10

**Title:** Wigs and Hairstyles in the Theatre.

**Presenter(s):** Natasha Woitzel

**Department:** Theatre Arts

**Advisor:** Theresa Carson

**Abstract:** I will be displaying and speaking on wigs and hairstyles used for certain period plays.

11

**Title:** Justice Thurgood Marshall

**Presenter(s):** Darren Krein

**Department:** Political Science

**Advisor:** Andrew Conte

**Abstract:** Discussing the life and times of Justice Thurgood Marshall.

12

**Title:** Parent Child Communication Program: Case Study 5

**Presenter(s):** Lena McDowall, Kristin Bosch

**Department:** Speech/Language/Hearing Science

**Advisor:** Louis De Maio

**Abstract:** This study is one of seven case studies that analyzed the effects of Parent-Child Communication Program (PCCP) training on a mother with a child having delayed language development. Analyses were performed on the

mother's initiation and response patterns, and use of questions before and after PCCP training. The PCCP was developed by Dr. Louis De Maio to teach parents a method for promoting their children's communication and language development.

13

**Title:** On-Line Economics Dictionary

**Presenter(s):** Economics Class

**Department:** Economics

**Advisor:** Greg Stutes

**Abstract:** The spring 2002, Economics 320, and Economics 204 students have combined their economics knowledge to create a visual on-line economics dictionary. From entries like opportunity cost, Enron, and even George Bailey from It's A Wonderful Life, we have a broad and entertaining look at the field of economics.

14

**Title:** Understanding the Power of Rhetoric in Society

**Presenter(s):** Valerie Waldock, Colee Campbell, Meghan Watkin, Michelle Lehrke,

**Department:** Speech Communication

**Advisor:** Tim Borchers

**Abstract:** In this panel discussion we will examine four cultural artifacts, analyze them using rhetorical theories, and draw implications for how society is influenced by communication discourse. By applying the study of rhetoric to these artifacts, we will understand how power is managed in our society. Further, this panel will express the multitude of ways in which rhetoric affects our everyday lives, from managing power to understanding society.

15

**Title:** Women In Nazi Germany: A Study of the Past, Present, and Future Historical Research

**Presenter(s):** Andrea Paulson

**Department:** History

**Advisor:** Christopher Corley

**Abstract:**

The era of Nazi Germany is one which has long baffled and intrigued both scholars and the general public. How such a system could exist and succeed to the extent which it did continues to compel people to study the era. Recently, the rise of women's studies programs has inspired a new interest in and perspective of the past. The study of women, their experiences, and roles in Germany from 1919-1945 lends new insight to a long studied topic. It is through past, present, and future research that a new understanding of this complicated time will continue to develop, in an attempt to answer many unanswered questions regarding women in Nazi society. "Women in Nazi Germany" is a small sample of the research that has been conducted and continues to be pursued within the context of women and the Nazi movement. This

presentation will serve to introduce and analyze some of the research which has already been conducted. It will also serve to explain why and to what extent women were involved and how they influenced the Nazi Party and government.

## 16

**Title:** Human Rights: Who do they belong to?

**Presenter(s):** Tammie Yak

**Department:** Social Work

**Advisor:**

**Abstract:** This is a workshop on the definition of human rights and what we can do to help ensure that everyone's rights are protected.

## 17

**Title:** Normalization of Violence Against Women in Maxim Magazine

**Presenter(s):** Melissa Iverson

**Department:** Mass Communication

**Advisor:** Susanne Williams

**Abstract:** Violence appears in every aspect of the media today. It is reported on the news, shown in television programs and movies, and appears in magazines. Violent images also appear on the Internet. Media are a large part of everyday life, which means that violent images are viewed daily. This raises many questions about how users of any medium are affected by violence: Are viewers desensitized by the reoccurring images of violence in the media? Does the media show violence as a normal part of peoples' lives? How does the media portray violence in relation to gender in the media? This presentation will address the normalization of violence against women in Maxim magazine.

## 18

**Title:** Hatch's Battalion

**Presenter(s):** Eric Wilkie

**Department:** History

**Advisor:** Steven Hoffbeck

**Abstract:** Hatch's Battalion is a paper that I wrote for a Senior Seminar class. It describes the life of a battalion leader who is stationed in Pembina, ND in 1863. Hatch was assigned the task to bring to justice the remaining Dakota Indians who were wanted for crimes during the Dakota Conflict of 1862. The story begins in St. Paul, and follows the battalion on its arduous journey to Pembina. Also included in the story is a brief description of the Dakota Conflict which is often overlooked because of the Civil War that was taking place at the same time.

## 19

**Title:** Adjuvant Activity of Mutated *S. aureus* Enterotoxin C Protein in Balb/c Mice

**Presenter(s):** Aaron Sykes, Damian Holznagel, Justin Klitzke, Jason Brown

**Department:** Chemistry/Dragontech

**Advisor:** Joseph Provost and Mark Wallert

**Abstract:** The *Staphylococcus aureus* enterotoxin C (SEC) is a well-established up modulator of the systemic immune response. However, due to the high toxicity of SEC, it is a poor choice as a vaccine adjuvant. A mutated form of SEC was created and obtained for its potential use in the creation of a DNA vaccine adjuvant. The mutated SEC was 6X Histidine tagged for expression and purification. The purified SEC protein was injected into Balb/c mice in conjunction with bovine serum albumin (BSA) and tested for immunostimulatory response as compared to Freund's adjuvant with BSA.

## 20

**Title:** Defining a Role for the Arp2/3 Complex in Mitochondrial Morphology and Inheritance

**Presenter(s):** Aaron Sykes, Damian Holznagel

**Department:** Biology/Chemistry

**Advisor:** Ellen Brisch

**Abstract:** The mitochondrion is a complex organelle with a double membrane (inner and outer), its own genome and a separate protein synthetic machinery. A variety of important cellular functions are carried out by the mitochondrial compartment including reactions of the TCA cycle, oxidative phosphorylation and ATP production. In the budding yeast, *Saccharomyces cerevisiae*, mitochondria must be inherited. Mitochondria are transferred from mother to daughter cell in a process termed budding. The mitochondria's genetic integrity is dependent upon mitochondrial morphology. In wild type cells, mitochondria form a long, tubular, branched network. There is evidence that the actin cytoskeleton is a crucial component because the cytoskeleton controls mitochondrial morphology and inheritance during vegetative yeast cell growth. Numerous actin mutants have been identified that display abnormal mitochondrial morphology and inheritance. The Actin Related Protein 2/3 complex (Arp2/3) is a septamer of highly conserved, distinct polypeptide subunits. The Arp2/3 complex has been shown to nucleate actin polymerization at membranes. This polymerization has been implicated in mitochondrial movement. In fact, two mitochondrial membrane proteins, Mmm1p and Mdm10p, are also required for the association of the Arp2/3 complex with the mitochondria. It is our contention that mutations to the different subunits of the Arp2/3 complex will result in aberrant mitochondrial morphology and inheritance. By creating yeast mutants lacking subunit(s) of the Arp2/3 complex and examining them microscopically with the aid of DiOC6 dye, to preferentially stain mitochondria and Rhodamine Phalloidin to stain actin, it will allow for screening of abnormal morphology and inheritance. This may provide insight into the role of the Arp2/3 complex in mitochondrial motility and morphology.

## 21

**Title:** DNA Vaccine Adjuvant Activity of Mutated *S. aureus* Enterotoxin C Encoding Plasmid in Balb/c Mice

**Presenter(s):** Aaron Sykes, Damian Holznagel, Justin Klitzke, Jason Brown

**Department:** Chemistry/Dragontech

**Advisor:** Joseph Provost and Mark Wallert

**Abstract:** DNA vaccine technology is a promising and exciting new field. DNA vaccine adjuvants increase the efficacy of the DNA vaccine. The *Staphylococcus aureus* enterotoxin C (SEC) is a well-established up modulator of the systemic immune response. However, due to the high toxicity of SEC, it is a poor choice as a vaccine adjuvant. A mutated form of SEC was created and obtained for its potential use in the creation of a DNA vaccine adjuvant. The DNA vaccine adjuvant construct was created and injected in addition to BSA encoding plasmid into Balb/c mice. The mice were then tested for immunostimulatory response as compared to Freund's adjuvant and BSA encoding plasmid injections.

## 22

**Title:** Christopher Columbus as a Capitalist, as a Missionary, and as a Failure

**Presenter(s):** Jessica Nelson

**Department:** History

**Advisor:** Dieter Berninger

**Abstract:** This presentation will present the true identity and history of Christopher Columbus: a capitalist in search of gold and wealth, a missionary who claimed to want to convert the natives, and a failure in many respects.

## 23

**Title:** Health and illness in developing countries

**Presenter(s):** Roxanne Stewart

**Department:** Sociology

**Advisor:** Sue Humphers-Ginther

**Abstract:** My presentation will cover the the rising incidence of the HIV/aids virus among children in poorer developing countries, as well as other diseases related to drinking water and sanitation needs such as cholera, typhoid fever and childhood diarrheal illnesses. It will also address the need for health care provisions in developing nations and what we can do to help. The developing nations looked at will be countries in the Caribbean as well as some African nations.

## 24

**Title:** Effect of short term UV light exposure on photosynthesis in isolated spinach chloroplasts

**Presenter(s):** Jim Denker, Jason Krumwiede

**Department:** Biology

**Advisor:** Chris Chastain

**Abstract:** No abstract submitted.

## 25

**Title:** Effects of reduced light during growth on photosynthesis potential in isolated chloroplasts

**Presenter(s):** Brett Lehner

**Department:** Biology

**Advisor:** Chris Chastain

**Abstract:** No abstract submitted.

## 26

**Title:** Effect of short term UV light on photosynthesis in spinach leaves

**Presenter(s):** Jonathan Watkins, Vian Abdulhakim

**Department:** Biology

**Advisor:** Chris Chastain

**Abstract:** No abstract submitted.

## 27

**Title:** Effect of reduced light during growth on photosynthesis potential in corn leaves.

**Presenter(s):** Tom Murphy, Chris Joyce

**Department:** Biology

**Advisor:** Chris Chastain

**Abstract:** No abstract submitted.

## 28

**Title:** This is "Absurd": A Look at the History, Elements, Comments and Reactions of the Theatre of the Absurd

**Presenter(s):** Rachel Deibert, Carrie Bican

**Department:** Theatre Arts

**Advisor:** Theresa Carson

**Abstract:** The Theatre of the Absurd Carrie Bican & Rachel M. Deibert Minnesota State University Moorhead Abstract In the 1950's and 60's the theatre of the Absurd grew out of philosophical questions and antics from other theatre styles. Playwrights like Samuel Beckett and Harold Pinter worked diligently to create a new style of theatre that explored existential questions posed by some of the most well-known Western philosophers (i.e. What is real?, What is the purpose of human existence?). "As a result, absurd plays assumed a highly unusual, innovative form, directly aiming to startle the viewer, shaking him out of this comfortable, conventional life of everyday concerns (Culik, 2000, p.1)." Through an examination of its philosophical and theatrical basis, its elements, and its social commentator perspectives this presentation seeks to further extend the understanding of the links of theatre history and philosophy's reflection in the arts. Reference Culik, J. (2000). The Theatre of the Absurd: The West and The East [online]. The University of Glasgow. Available: <http://www2.arts.gla.ac.uk/Slavonic/Absurd.htm> [2002,February]

## 29

**Title:** Effects of Nitrogen Fertilizer Deficiency on Photosynthetic Performance of Corn

**Presenter(s):** Kelly Benson, Holly Beimdiek

**Department:** Biology

**Advisor:** Chris Chastain

**Abstract:** No abstract submitted.

## 31

**Title:** Private vs. Public Education: What is better?

**Presenter(s):** Nicole Zacher

**Department:** Economics

**Advisor:** Oscar Flores

**Abstract:** I will analyze and compare several factors concerning public and private school. Then I will contrast between the factors and come to a conclusion on which one is better.

## 32

**Title:** Cost/Benefit Analysis of Moorhead Wind Power Project

**Presenter(s):** Eric Graff

**Department:** Economics

**Advisor:** Oscar Flores

**Abstract:** This will be a study of the Moorhead wind turbines and their benefit to the community. I will explain the major advantages and disadvantages of wind power and how it compares to traditional energy resources.

## 33

**Title:** Progress Towards Enhancing the Survival Rate of Hatchery-Reared Walleye

**Presenter(s):** Travis Thiel, Mariya Rzaszutak

**Department:** Biology

**Advisor:** Brian Wisenden

**Abstract:** Aquatic prey recognize injury-released chemical alarm cues from their own species as an indicator of predation risk. Predator recognition is acquired by associating predator cues (e.g., its odor) with injury-released alarm cues. This phenomenon has been well established for percids (darters), ostariophysans (minnows), and other aquatic invertebrates. Hatchery fish are stocked into lakes to enhance local fisheries. However, they are predator-naïve. Losses to predation of hatchery-reared fish typically exceed 50% in the first year after stocking. The walleye (*Stizostedion vitreum vitreum*) native to Midwestern water bodies fall in this category. In a previous project it was found that walleye possess specialized skin cells similar to the ones that contain alarm cues in minnows. It was also exhibited that an aversive behavioral response to injured walleye skin occurs. Therefore, a continuation of tests was performed to see if juvenile walleye can associate walleye alarm cues from these specialized skin cells with northern pike (*Esox lucius*) odor, a natural predator. In our experiment, the behavioral response to conspecific alarm cue, and the learned response to predator odor were inconsistent. Consequently, statistical analysis did not reveal any significant effects of

alarm or predator cues on walleye behavior. The experimental protocol needs to be modified to better accommodate walleye behavior in captivity in order to better test our question.

## 34

**Title:** Racial Profiling in Law Enforcement

**Presenter(s):** George Vinson

**Department:** Spanish

**Advisor:** Benjamin Smith

**Abstract:** I will present information on racial profiling including what it is, research on its existence, research on its justification, and possible ramifications of this problem in our society. In this presentation, I will use a Power Point program.

## 36

**Title:** Legal Ethics Meets The Movies

**Presenter(s):** Jessica Steinbach

**Department:** Paralegal

**Advisor:** Larry Nordick

**Abstract:** Movies, books, and other popular media depicting the legal profession have become very popular. However, the problem is that the situations that arise in this entertainment are not always accurate. The goal of this presentation is to inform listeners about the legal ethical problems portrayed throughout popular entertainment.

## 37

**Title:** Polyamine-Mediated DNA Purification with the Compaction Agent, AD010835

**Presenter(s):** Lisa Hansen, Michelle Johnson

**Department:** Biology/Chemistry

**Advisor:** Joseph Provost and Mark Wallert

**Abstract:** Nucleic acids are often used in human vaccinations and therapeutics. For this reason DNA purification is of great importance. Commonly RNase is used in the purification of DNA but in this case and in usage in vaccines it is not adequate due to contaminates RNase might possess. Other methods of DNA purification are very time-consuming and may require chromatography and filtration. This procedure was done without the use of chromatography, RNase, filtration and in a timely fashion. The secret to our method was the polyamine, AD010835. AD010835 is a compaction agent that is cationic in nature and works by binding to the phosphate backbone of DNA. The actual compaction neutralizes the inter-helix interactions, decreasing the free energy and, thus, the transition state. By binding to the major and minor grooves, the volume occupied by DNA is dramatically reduced. AD010835's main function is to remove the vast majority of NA from the plasmid DNA desired and result in a small, more dense form of DNA.

### 38

**Title:** Do you have the perfect family?

**Presenter(s):** Jessica Childress

**Department:** Early Childhood Education

**Advisor:** Beth Anderson

**Abstract:** It is my belief that a child raised in a one-parent home, or by grandparents, can be just as well developed and educated in school as a child coming from a two-parent home, provided that the environment is loving and caring. Assuming that a child raised in a two-parent home is better can be misleading. I would like to share with you the knowledge that has brought me to this conclusion.

### 39

**Title:** The Impact of Epidemic Diseases on the Conquest of the Inca and Aztec Empires by the Spanish Conquistadors

**Presenter(s):** Dana Schouten

**Department:** History

**Advisor:** Dieter Berninger

**Abstract:** The main point of the paper is that European diseases brought to the Americas by the conquistadors were the factor that guaranteed European conquest of the Incas and Aztecs, not technologically superior weapons. Following the arrival of the Europeans, epidemics of smallpox, measles and influenza swept through the Native American population. Death rates have been estimated at between thirty and fifty percent of the population, with some even higher. The epidemics also affected food production, causing even more people to die from starvation. The epidemics also upset the political balances of the Inca and Aztec Empires which allowed the Spaniards to take advantage of the instability in the Empires. Without the effects of European epidemic diseases on the Native Americans it would have been much more difficult, if not impossible, for the Spanish to have conquered either the Aztec or the Inca Empires.

### 44

**Title:** The Relationship Between Alarm Cues and the Approach of a Visual Predator in a Prey Species

**Presenter(s):** K. A. Vollbrecht

**Department:** Biology

**Advisor:** Brian Wisenden

**Abstract:** Alarm signaling occurs when animals produce a signal in response to predation or risk of predation that allows other individuals to become aware of danger. Recent work has suggested that the behavioral response to chemical cues may depend on visual information about risk. With this knowledge, we wanted to test the effect of chemical cues on the behavioral response to visual cues in predator-prey interactions. Specifically, which would become more prevalent in helping a prey species detect and avoid predation? As an alarm cue we used skin extract from freshly caught prey species. This alarm substance is released when the prey is injured in an attack by a predator; thus, it reliably indicates the presence of predation risk. Prey species (minnows) were caught with nets, killed, then lightly cut through the skin 10 times on each side and washed with 60ml of lake water to produce a chemical alarm

cue. First we observed 5 min of pre-stimulus behavior. Sixty ml of alarm cue (or water control) was injected through a submerged hose for 1 min, followed by 2 min of post-stimulus observations. A model predator was then pulled through the area where the alarm (or water) cue was released along its path in front of the camera; this took an average of about 10 sec. Once the predator was all the way to the shoreline, 3 min of post-predator observations were taken. There appears to be no relationship between alarm cue nor approach of a model predator on prey behavior. This can be for several reasons. First that the prey species is always on alert for the approach of a predator and that the alarm cue is only used to give the prey a last second warning when a predator attacks a school. This would help the survival of the minnows because, if they fled an area to escape one predator, they could be running into the path of another predator. These data suggest that prey fish do not react overtly to alarm cue in nature as much as they do in lab experiments.

### 46

**Title:** RhoA Activation by Phenylephrine is Essential for the Regulation of ERK, NHE1, and Stress Fiber Formation in CCL39 Fibroblasts.

**Presenter(s):** Melanie Funfar, Nichole Korpi

**Department:** Biology/Chemistry

**Advisor:** Mark Wallert and Joseph Provost

**Abstract:** Chinese hamster lung (CCL39) fibroblasts express exclusively isoform 1 of the Na<sup>+</sup>/H<sup>+</sup> exchanger (NHE1). NHE1 is an antiporter which transports Na<sup>+</sup> into the cell in exchange for H<sup>+</sup> extrusion, thus being a primary regulator of intracellular pH (pH<sub>i</sub>). NHE1 activation causes quiescent cells to become alkaline, allowing for their entry into the cell cycle. We have shown that Phenylephrine (PE) activation of NHE1 requires Extracellular Receptor Kinase (ERK) activity. However, the entire signaling pathway is still unclear. Here we examine RhoA as an essential protein component mediating PE-induced G-protein coupled  $\alpha_1$ -adrenergic receptor activation to ERK and NHE1 regulation. C3 exoenzyme (*Clostridium botulinum*) is used as a RhoA inhibitor. C3 exoenzyme must be incorporated into the cells before PE stimulation. We used green fluorescent protein (GFP) as a reporter construct for optimizing C3 exoenzyme protein transfer methods: scrape loading, BioPORTER protein transfection, and microinjection. We believe that treatment with C3 exoenzyme will block ERK and NHE1 activity, thus indicating that RhoA is specifically involved in PE signaling. Transfecting the CCL39 cells with a dominant negative RhoA will also inhibit RhoA activity, leading to decreased ERK and NHE1 activation. Furthermore, a published report states that stress fiber formation is controlled by RhoA and NHE1 (Vexler). Therefore, addition of PE should lead to the formation of stress fibers in CCL39 cells and minimal stress fiber formation will be seen when treated with C3 exoenzyme. This data will suggest that RhoA is involved in the ERK mediated activation of NHE1 by the  $\alpha_1$ -adrenergic receptor and is essential for the formation of stress fibers.



## 47

**Title:** Differences in  $\text{Na}^+/\text{H}^+$  Activation in Chinese Hamster Lung (CCL39) Fibroblasts by Lysophosphatidic Acid (LPA) and Phenylephrine (PE).

**Presenter(s):** Melanie Funfar, Nichole Korpi, Andrew McCoy

**Department:** Biology/Chemistry

**Advisor:** Joseph Provost and Mark Wallert

**Abstract:** Intracellular pH ( $\text{pH}_i$ ) is regulated almost exclusively through the  $\text{Na}^+/\text{H}^+$  exchanger (NHE) in CCL39 fibroblasts. LPA and PE, the  $\alpha_1$ -adrenergic agonist, have already been shown to activate NHE, but the entire signaling pathway is yet to be determined. In CCL39 fibroblasts, resting  $\text{pH}_i$  was  $6.93 \pm 0.09$ . Upon addition of  $100 \mu\text{M}$  LPA,  $\text{pH}_i$  increased by  $0.47 \pm 0.06$ . Upon addition of  $100 \mu\text{M}$  PE,  $\text{pH}_i$  increased by  $0.16 \pm 0.02$ . These experiments were done blocking MEK using PD98059 or dominant negative MEK resulting in a reduction of PE activation by 80% and a reduction of LPA activation by 45%. We also investigated PE/LPA additivity in the activation of NHE. When LPA was added first,  $\text{pH}_i$  increased by  $0.53 \pm 0.06$ . A subsequent PE addition only increased  $\text{pH}_i$  by  $0.02 \pm 0.02$ , resulting in a total stimulation of  $0.55 \pm 0.06$ . Conversely, when PE was added first,  $\text{pH}_i$  increased by  $0.14 \pm 0.04$ . A subsequent LPA addition caused a  $\text{pH}_i$  increase of only  $0.40 \pm 0.04$ , resulting of a total  $\text{pH}_i$  increase of  $0.54 \pm 0.08$ . Data from both additivity experiments suggest that there exists a common aspect of intracellular signals used by PE and LPA. However, LPA also uses a second signaling pathway. Immunokinase assays of PE and LPA stimulated cells showed an additivity of ERK activation by the agonists. ERK activation alone is not sufficient for full NHE activation.

## 48

**Title:** Effects of Safe Zone training on Peoples' Perception of GLBT Issues

**Presenter(s):** Jamie Tate

**Department:** Psychology

**Advisor:** Willie Hallford

**Abstract:** This study will look at how Safe Zone training effects the perceptions of GLBT issues. I will look at how people perceive GLBT issues before training and then look at them after going through training to see how they differ.

## 49

**Title:** Parent-Child Communication Program: Case Study 4

**Presenter(s):** Amanda Flugstad, Megan Crowsten

**Department:** Speech/Language/Hearing Science

**Advisor:** Louis De Maio

**Abstract:** Parent/child interaction is a critical variable for children to develop his or her language and communication skills. The Parent-Child Communication Program is a program that is designed to alter parent behavior to maximize opportunities to enhance communication and language development with their children. This study analyzes the initiation and response ratios and questions used by mothers before and after the PCCP training. The study will look at the effects of the training on a parent who went through the PCCP training.

## 50

**Title:** A Molecular Rod with pH Regulated Length

**Presenter(s):** Larry Louisiana

**Department:** Chemistry

**Advisor:** Asoka Marasinghe

**Abstract:** Based on Drexlers call for a functional Stewart Platform that fits into the nanostructure category (1) a theoretical model is proposed that may allow six degrees-of-freedom (6-DOF) motion. Simulations have shown that a polymeric heterocyclic strut system can be constructed that will allow the length of a rod-like molecule to be varied proportional to pH. Emphasis is given to assessments of the positional reliability of this structure with respect to its application as a molecular building block (MBB) that can be used in Stewart Platform construction.

## 51

**Title:** Inhibition of MAPK Activity by Okadaic Acid on Microtubules in Sea Urchin Eggs

**Presenter(s):** Mario Fernandez

**Department:** Biology

**Advisor:** Ellen Brisch

**Abstract:** Microtubules (MTs) are an important cytoskeletal element found in most eukaryotic cells. MTs form the mitotic spindle that rapidly and accurately segregates the replicated chromosomes to the opposite sides of the dividing cell. Biologists are intrigued as to how this process works. The study of this process is a critical area of cancer research. Cells that fail to segregate DNA into new cells will not divide. The identification of the mechanisms and targets that regulate microtubule assembly may provide us with new strategies for halting division in cancerous cells. Sea urchin eggs are an excellent model system in which to study spindle assembly. The regulation of microtubule assembly is controlled by the protein phosphorylation/dephosphorylation of Microtubule Associated Proteins (MAPs). These proteins bind to, copurify with and stabilize MTs. When MAPs become phosphorylated they lose their affinity for MTs, causing the MTs to shrink. Thus MAPs can modulate the assembly/disassembly of MTs. Previous work has identified 44kD and 48 kD microtubule copurifying proteins as potential phosphorylation targets. The molecular weights of these proteins are suggestive of MAP Kinase (Mitogen Activated Protein) members. These family members play important roles in growth and mitogenic (potential cancer causing) pathways. Our goal is to determine how MAP Kinase regulates cell division and spindle assembly by monitoring MT assembly in the presence and absence of okadaic acid, a known phosphatase inhibitor. Okadaic acid has previously been demonstrated to alter MT assembly. We are interested in identifying the MAPs that this phosphatase inhibitor may protect from dephosphorylation. Using this approach we hope to identify a cell signaling regulator of MT assembly.

## 52

**Title:** Changes in MAPK Activity During Fertilization

**Presenter(s):** Molly Kintop, Stephanie Peasley

**Department:** Biology

**Advisor:** Ellen Brisch

**Abstract:** Microtubules (MTs) are an important cytoskeletal element found in most eukaryotic cells. In dividing cells, MTs form the mitotic spindle which rapidly and accurately segregates the replicated chromosomes to the opposite sides of the dividing cell. How cells control the assembly of the mitotic spindle has intrigued biologists for many years. The study of mitotic spindle assembly is a critical area of cancer research. Cells that are unable to segregate DNA into new cells will fail to divide. Thus identifying mechanisms or targets that regulate microtubule assembly may provide us with new strategies for halting division in cancerous cells. Sea urchin eggs are an excellent model system in which to study spindle assembly. Eggs are easily obtained from mature female sea urchins. These eggs provide an excellent source of clean protein suitable for microtubule protein preparations. Sea urchin eggs can be fertilized in vitro and will assemble into functioning mitotic spindles. The regulation of microtubule assembly is currently thought to be controlled by the protein phosphorylation of Microtubule Associated Proteins (MAPs). These proteins bind to, copurify with and stabilize MTs and thus help modulate the growth of MTs. MAPK is a cell-signaling protein that phosphorylates a number of cellular targets including MAPs. Immunoblot analysis of sea urchin microtubule protein from our lab indicates that MAPK family members copurify with MTs and may be responsible for MAP phosphorylation. Our goal is to determine how MAPK family members regulate cell division and spindle assembly by investigating changes in MT protein phosphorylation during early developmental events. Specifically, we are investigating how fertilization may regulate the activity of MAPK.

## 53

**Title:** Temperature Studies of the Intramolecular Hydroamination Reaction

**Presenter(s):** Justin Klitzke

**Department:** Chemistry

**Advisor:** Donald Krogstad

**Abstract:** For the past year, the intramolecular hydroamination reaction has been used as a model to study catalysis in water and several organic solvents. An intramolecular hydroamination reaction involves the combination of an amine (NR<sub>3</sub>) and an alkene (C=C) or an alkyne (CC) within the same molecule. During this study, it was discovered that water is a superior solvent for this transformation. To better understand why this is, we are presently examining the thermodynamic parameters of the rate determining step by performing the reaction at varying temperatures and preparing Arrhenius and Eyring plots. A discussion of these plots and the information determined from them will be presented.

## 54

**Title:** Cell Cycle Coordinated Mitochondrial Dynamics

**Presenter(s):** Heidi Jo Johnson, Austin McCoy, Jen Risan

**Department:** Biology

**Advisor:** Ellen Brisch

**Abstract:** Mitochondria function to provide cells with energy for all metabolic processes. Throughout the cell cycle, mitochondria are highly dynamic. They continuously move about and change shape depending on which stage of the cell cycle they are in. This process is termed mitochondrial dynamics. In *Saccharomyces cerevisiae*, the inheritance of mitochondria from mother cell to daughter bud during cell division is an essential feature of yeast cell growth. The analysis of mutants defective in mitochondrial morphology and inheritance has lead to the identification of some of the proteins that control mitochondrial dynamics. Classically, temperature sensitive yeast mutants were used to identify cell cycle regulatory proteins. The analysis of mutants defective in events such as bud formation, DNA synthesis, spindle pole body duplication, and cytokinesis lead to the identification of proteins that control each of these integral steps in cell division. It is our hypothesis that molecules that control cell division and cell cycle regulation play a key role in mitochondrial dynamics. We are currently testing our hypothesis by examining the following cell cycle mutants for defects in mitochondrial dynamics: *cdc13*, *cdc14*--meiosis and sporulation, *cdc 5*, *cdc7*, *cdc15*--kinases, *cdc2*, *cdc6*, *cdc9*--DNA replication. The specific mechanisms of how mitochondrial dynamics are regulated during the cell cycle are beyond the scope of this project. However, by identifying cell cycle mutants with mitochondrial defects we can build a model for how mitochondrial dynamics are coordinated during the cell cycle.

## 56

**Title:** Ukraine: New Accounting for the New Century

**Presenter(s):** Alexandra Sapegina

**Department:** Accounting

**Advisor:** Sheri Erickson

**Abstract:** In 1999 Ukraine made the first step toward the transformation of its accounting standards according to the internationally recognized canons. Instead of adopting International Accounting Standards (IAS) or Generally Accepted Accounting Principles (GAAP), Ukraine has decided to create its own Ukrainian National Standards of Accounting (UNSA). This report gives the economical background of accounting reform, summarizes its results to date, compares and contrasts the UNSA with GAAP, and touches on the difficulties of transformation to the new accounting standards in Ukraine.

## 57

**Title:** What Would You Ever Need With Two Record Players?  
(Or the Vinyl Frontier)

**Presenter(s):** Matt Engelstad

**Department:** Music

**Advisor:** Laurie Blunsom

**Abstract:** Over the past 25 to 30 years hip hop has been making itself known across the globe as a culture, lifestyle and a music with the DJ central to the creation of the distinct sounds defining the movement. Over the years turntablism has been progressing at a rapid pace evolving into a discipline emphasizing the fervent development of improvisation and virtuosity of performance not unlike jazz but reorganizing recorded sound into a state much more akin to the practices of electroacoustic music. Now with the development of an innovative transcription method for this otherwise aural tradition, turntablism stands ready to take a leap beyond its familiar hip hop home to an unprecedented future among more traditionally refined genres of Western music. My research examines a body of work representative of the advancing musical practice of turntablism and the possibilities abound. I will examine the growing performance techniques of individual DJs and 'crews' (turntable ensembles) and how their work bears similarity to composers such as John Cage and Pierre Schaeffer who in years previous realized the properties of the phonograph via their own innovations. Aforementioned codification methods will also figure heavily into my speculations of the melding of more traditional compositional methods with this promising new form.

## 58

**Title:** Euthanasia vs. Religion

**Presenter(s):**

**Department:** Sociology

**Advisor:** Sue Humphers-Ginther

**Abstract:** Historically, religious communities have sought to appropriate death within the life cycle through traditional rituals of funerals, memorials, and religious ceremonies. Religious groups have also taught that death brings some form of life after death. What do these groups have to say about people who want to choose whether or not they want to live? We will be looking at the religions of Judaism, Christianity, and Islam and addressing the ethical issue of Euthanasia. All three religions have an interesting twist on what they believe to be as ethical. Jewish and Christian religions express that humans are an "image of God". Islamic theology uses no such language, but it still values the lives of humans. All three religions hold the view that God chooses when one is to live and die. But still, a doctor can also allow a patient to die if the continuation of their life insults the dignity of that person, or interferes with their bodily integrity. Should a doctor play the role of a god?

## 59

**Title:** Solid State NMR spectrometer

**Presenter(s):** Brian Meland

**Department:** Physics and Astronomy

**Advisor:** Ananda Shastri

**Abstract:** I have been constructing a solid-state NMR spectrometer. This device uses nuclear magnetic resonance for analyzing nuclear spectra and measuring nuclear relaxation times. It is used in studying the dynamic properties of nuclei in solids. I will show some of the work I have done on constructing the power supply, which supplies power to the entire system, and RF gating box, which creates pulses of radio waves that will put the nuclei into excited states. I will also explain some of the background information on NMR and its applications.

## 60

**Title:** The Role of the RhoA Dependent Kinase ROCK on ERK Activation

**Presenter(s):** Andrew McCoy, Justin Voog

**Department:** Biology/Chemistry

**Advisor:** Mark Wallert and Joseph Provost

**Abstract:** Phenylephrine (PE), an  $\alpha_1$ -adrenergic receptor agonist, has been shown to activate both Extracellular Regulated Kinase (ERK) and the Sodium-Hydrogen Exchanger (NHE-1) in Chinese hamster lung (CCL39) fibroblasts. Activation of ERK, an upstream tyrosine/threonine kinase in the NHE activation cascade, can be blocked with the addition of the ROCK inhibitor Y27632. Conserved in a variety of cell lines is the dependence of ROCK activation mediated by RhoA. Cycling between active, GTP-bound and inactive, GDP-bound states, RhoA acts as a molecular switch to control a number of cellular processes including ROCK activation. Dominant-negative RhoA-transfected CCL39 cells incubated with PE had a dramatic reduction in phosphorylated ERK levels. We hope to show that PE addition triggers RhoA-GTP binding, causing it to migrate from the cytosol to the membrane where it is able to interact with ROCK. GFP-tagged RhoA transfected cells will allow translocation of RhoA to be monitored via fluorescent microscopy. To help further support the PE mediated activation of RhoA, PE stimulated cells will be treated with GST-ROCK fusion protein in hopes of co-precipitation with GTP-bound RhoA. Determining the role of ROCK and Rho and its effect on NHE activation is yet to be determined.

## 61

**Title:** Patterns of Family Alcoholism

**Presenter(s):** Amber Hvezda, Kirsten Fuglestad, Donna Adam

**Department:** Social Work

**Advisor:** Shawn Ginther

**Abstract:** Family patterns of Alcoholism \*Facts on patterns  
\*Presentation findings \*personal examples \*families at risk

## 62

**Title:** Creating Knockout Constructs in Yeast

**Presenter(s):** Anna Naig

**Department:** Biology

**Advisor:** Ellen Brisch

**Abstract:** Mitochondria function to provide cells with energy for all metabolic processes. Throughout the cell cycle, mitochondria are highly dynamic. They continuously move about and change shape depending on which stage of the cell cycle they are in. This process is termed mitochondrial dynamics. In *Saccharomyces cerevisiae*, the inheritance of mitochondria from mother cell to daughter bud during cell division is an essential feature of yeast cell growth. The analysis of mutants defective in mitochondrial morphology and inheritance has lead to the identification of some of the proteins that control mitochondrial dynamics. We are interested in understanding how mitochondrial inheritance is coordinated with the cell cycle. We plan to generate specific mutations in genes that regulate the cell cycle in yeast. Our strategy is to use a variety of molecular techniques including PCR in order to generate a "knockout" construct. We will then observe these yeast cells by staining mitochondria and scoring their morphology. Any cells with defects in morphology will give us clues as to which cell cycle regulators control mitochondrial inheritance.

## 63

**Title:** Differential ERK Activation in Chinese Hamster Lung (CCL39) Fibroblasts by Primary Alcohols and Dominant-Negative MEK

**Presenter(s):** JaDean Anderson, Brad Moran

**Department:** Biology/Chemistry

**Advisor:** Mark Wallert and Joseph Provost

**Abstract:** Serum, growth factors, and lysophosphatidic acid activate the  $\text{Na}^+\text{-H}^+$  exchanger (NHE) in Chinese hamster lung cells (CCL39). Recently, our laboratory reported that the  $\alpha_1$ -adrenergic agonist phenylephrine (PE) activates NHE through an ERK-dependent pathway. We believe that PE stimulation diverges and involves several intermediates in the regulation of NHE. One pathway involves the activation of Phospholipase C $\beta$ , Protein Kinase C $\alpha$ , Raf-1, MEK and Erk. A second potential pathway, involves the PKC-mediated activation of Phospholipase D (PLD). PLD converts phosphatidocholine to choline and phosphatidic acid. In some cells types, phosphatidic acid leads to the activation of the Ras-Erk pathway directly or by activating another isoform of PKC that can phosphorylate Raf, MEK, or Erk. The goal of our experiments is to determine the involvement of PLD in this activation process and whether the activation occurs at the level of MEK or above. The involvement of PLD will be tested by the addition of the primary alcohols butanol and ethanol to the cells. If PLD is involved, this will block the formation of phosphatidic acid and the activation of the Ras-Erk pathway. By adding a secondary alcohol to the cells, PLD will not convert phosphatidocholine to phosphatidic acid, thus having no effect on ERK regulation. To investigate the activation of the Ras-Erk pathway at the level of MEK, a dominant-negative MEK construct has been transfected into cells. This construct blocks the passage of the signal from Raf-1 to Erk. Erk activation by PE is completely blocked by the addition of dominant-negative MEK.

## 64

**Title:** Differences in  $\text{Na}^+\text{/H}^+$  Activation in Chinese Hamster Lung (CCL39) Fibroblasts by Lysophosphatidic Acid (LPA) and Phenylephrine (PE)

**Presenter(s):** Hillary Thronson

**Department:** Biology/Chemistry

**Advisor:** Mark Wallert and Joseph Provost

**Abstract:** Intracellular pH (pHi) is regulated almost exclusively through the  $\text{Na}^+\text{/H}^+$  exchanger (NHE) in CCL39 fibroblasts. LPA and PE, the  $\alpha_1$ -adrenergic agonist, have already been shown to activate NHE, but the entire signaling pathway is yet to be determined. In CCL39 fibroblasts, resting pHi was  $6.93 \pm 0.09$ . Upon addition of  $100 \mu\text{M}$  LPA, pHi increased by  $0.47 \pm 0.06$ . Upon addition of  $100 \mu\text{M}$  PE, pHi increased by  $0.16 \pm 0.02$ . These experiments were done blocking MEK using PD98059 or dominant negative MEK resulting in a reduction of PE activation by 80% and a reduction of LPA activation by 45%. We also investigated PE/LPA additivity in the activation of NHE. When LPA was added first, pHi increased by  $0.53 \pm 0.06$ . A subsequent PE addition only increased pHi by  $0.02 \pm 0.02$ , resulting in a total stimulation of  $0.55 \pm 0.06$ . Conversely, when PE was added first, pHi increased by  $0.14 \pm 0.04$ . A subsequent LPA addition caused a pHi increase of only  $0.40 \pm 0.04$ , resulting of a total pHi increase of  $0.54 \pm 0.08$ . Data from both additivity experiments suggest that there exists a common aspect of intracellular signals used by PE and LPA. However, LPA also uses a second signaling pathway. Immunokinase assays of PE and LPA stimulated cells showed an additivity of ERK activation by the agonists. ERK activation alone is not sufficient for full NHE activation. This work was supported by an NSF grant, MCB-0080243.

## 65

**Title:** Interacting Dark Matter in Galaxies

**Presenter(s):** Sara Jarolimek

**Department:** Physics and Astronomy

**Advisor:** Matt Craig

**Abstract:** Most of the mass in and surrounding an individual galaxy is an exotic form of matter called dark matter. I am searching for a dark matter model that accurately explains and predicts structure on both large and small scales. A model in which the dark matter interacts may fit observable characteristics of galaxies better than the standard non-interacting dark matter model. I am investigating the parameters that govern the structure of an interacting dark matter halo in a galaxy. I have been using the interacting dark matter model to do simulations of halo evolution, focusing on the relative importance of the annihilation and scattering cross sections in that evolution.

## 66

**Title:**  $\alpha$  Adrenergic Specific Signaling in Chinese Hamster Lung (CCL39) Fibroblasts

**Presenter(s):** Genny Clausen, Jenny Lang

**Department:** Biology/Chemistry

**Advisor:** Mark Wallert and Jooseph Provost

**Abstract:** The activity of NHE is regulated by the action of a wide variety of plasma membrane receptors. Included in this list are G-protein coupled receptors (GPCRs). The actions of these receptors are responsible for growth regulation and tissue regeneration. Mutations in these GPCRs have the potential to cause tumor growth and cancers. Phenylephrine (PE), an analog of norepinephrine, is used to study the adrenergic receptor pathway of NHE-1. Our experiment will test the receptor specificity of PE response. PE is added in the presence of three different inhibitors. The ERK activation is measured with the goal of finding which receptor class is activated. We will use propranolol which is a  $\beta$  adrenergic receptor blocker, prazosin which is an  $\alpha_1$  adrenergic receptor blocker, and yohimbine which is an  $\alpha_2$  adrenergic receptor blocker. These studies will determine the specific receptor involved with ERK regulation.

## 67

**Title:** Minnesota's Budget Crisis: A Taxing Political Problem

**Presenter(s):** Mass Communications Class

**Department:** Mass Communication

**Advisor:** C.T. Hanson

**Abstract:** A case study presentation that looks at the positioning of the major players involved in addressing the budget crisis in Minnesota. The presentation will explore the conflicting approaches being proposed to resolve the crisis. Stakeholder concerns and the impact of any budgetary action on those respective stakeholders will be identified.

## 68

**Title:** The Role of Phenylephrine in the Formation of Stress Fibers in Chinese Hamster Lung Fibroblasts

**Presenter(s):** Cheryl Sick

**Department:** Biology/Chemistry

**Advisor:** Mark Wallert, Joseph Provost, and Michelle Mallot

**Abstract:** Actin monomers in the cytoplasm of cells polymerize forming stress fibers under a variety of culture conditions. As a component of the cytoskeleton, stress fibers play an essential role in the process of cell growth and division. The formation of stress fibers is dependent upon the activation of the small G-protein RhoA through its effector Rock as well as the activation of the  $\text{Na}^+\text{-H}^+$  exchanger (NHE). The primary role of NHE is to control intracellular pH. Thus the activation of both RhoA and NHE is required for stress fiber formation. The lipid agonist Lysophosphatidic Acid (LPA) has the ability to initiate the formation of stress fibers in Chinese hamster lung (CCL39) fibroblasts. Building on this knowledge, we sought to demonstrate a novel role for Phenylephrine (PE) stimulating this same process. Our laboratory recently demonstrated that PE stimulated NHE activity in these cells. To test PE ability to stimulate stress fiber formation CCL39 fibroblasts were incubated with 100 $\mu\text{M}$  PE. Stress fiber formation was

measured using fluorescent labeled phalloidin. Micrographs of cells with and without PE treatment were then made. Stress fibers could be seen at a much higher density in PE treated cells than in untreated cells. This is contradictory to past data dealing with Gq, the G-protein that initiates the PE pathway. Because the pH level of a cell is a known factor of stress fiber formation, we used PS127 cells, which overexpress NHE, and PS120, which lack the exchanger, to attempt to determine the link between stress fibers and intracellular pH.

## 69

**Title:** Effect of Alarm Cues on Visual Cues in Glow Light Tetras

**Presenter(s):** Jason Brown

**Department:** Biology

**Advisor:** Brian Wisenden

**Abstract:** Fish of the superorder Ostariophysi have substances in their epidermis layer that act as chemical alarm cues. These chemical cues, commonly called alarm substances, alert the fish to the presence of a possible predation threat. It has been shown in previous studies that alarm substances play a critical role in survival. Fishes do not rely on chemical information alone. The visual presence of a predator also indicates predation risk. The purpose of this research was to explore the interaction between chemical alarm cues and visual presence of a predator using glowlight tetras (Ostariophysi, Characidae: Hemigrammas erythrozonus). Each test consisted of three equal periods: 1) the pre-stimulus period; 2) the chemical stimulus period, and 3) the visual stimulus period. We used 37-liter tanks with a 8 x 4 grid drawn on the front with each cell being 5cm x 5cm. Two glowlight tetras were placed in each tank. A second 37-liter tank was placed next to the first one such that the small panes faced each other. The second tank contained a convict cichlid (Archocentrus nigrofasciatus) or nothing (control). An opaque barrier was then placed between these tanks. I collected three behavioral responses, before and after the addition of a test cue (alarm cue or water), and after the removal of the barrier between the two tanks: 1) activity: the number of lines crossed; 2) vertical distribution: the test fish's cell coordinates taken at 15-second intervals, and 3) proximity to the predator (inspection/flee). The visual stimulus of the predator in the adjacent tank induced less inspection behavior and more defensive behavior after alarm substances were added than when water was added. In the absence of a predator in the adjacent tank, tetras inspected the predator tank more after alarm cue than after water. These data indicate that the behavioral response to a visual stimulus is contingent upon the contextual information contained in chemical cues.

## 71

**Title:** The Activation of PKC $\alpha$  is Required for the Phenylephrine-induced Activation of the Na<sup>+</sup>-H<sup>+</sup> Exchanger in Chinese Hamster Lung Cells, CCL39

**Presenter(s):** Heidi Boyum

**Department:** Biology/Chemistry

**Advisor:** Joseph Provost and Mark Wallert

**Abstract:** The Na<sup>+</sup>-H<sup>+</sup> exchanger isoform 1 (NHE-1), which is present in virtually all mammalian cells, has been linked to a variety of hormones, growth factors, and oncogenes. The mechanism of the activation of the NHE-1 varies depending on cell and agonist type. Phenylephrine (PE) activation of NHE-1 requires extracellular kinase (ERK) activity. ERK-mediated NHE-1 activation can occur through a Ras dependent or independent pathway. The involvement of PKC $\alpha$  in PE induced  $\alpha_1$ -adrenergic activation ultimately activates ERK and NHE-1 by phosphorylation of upstream elements of the ERK signaling pathway. The role of PKC $\alpha$  in both ERK and NHE-1 activation was studied. Addition of PE led to an increase in both phosphorylation of ERK and activation of NHE-1. Pre-incubation with a nonspecific protein kinase inhibitor, staurosporine, blocked PE-induced ERK and NHE-1 stimulation; thus, showing the dependence on ERK activation. Pre-incubation with Go G976 blocked PE-induced ERK and NHE-1 activation, thus indicating that PKC $\alpha$  was specifically involved in PE signaling pathway. Addition of PE leads to the translocation of PKC $\alpha$ . In the inactivated state, PKC is soluble (cytosolic) or loosely associated with the plasma membrane. Upon activation, PKC becomes tightly associated to the cellular membrane. The intracellular location of PKC $\alpha$  after PE addition was determined by analyzing fractions of the cytoplasm and the membrane by western blotting. In addition, fluorescence microscopy with GFP/PKC fusion protein was used to follow the movement of PKC $\alpha$  through the cell before, during, and after PE addition. The data suggests that PKC $\alpha$  translocation was involved in the ERK mediated activation of NHE-1 by the  $\alpha_1$ -adrenergic receptor and phosphorylation of Raf. This work was supported by a grant from the NSF MCB-0080243.

## 72

**Title:** ERK-mediated Activation of the Na<sup>+</sup>-H<sup>+</sup> Exchanger in Chinese Hamster Lung Fibroblasts is Dependent Upon Phospholipase C $\beta$

**Presenter(s):** Ali Metcalf

**Department:** Biology/Chemistry

**Advisor:** Mark Wallert and Joseph Provost

**Abstract:** The primary regulator of intracellular pH (pH<sub>i</sub>) in Chinese Hamster Lung (CCL39) fibroblasts is the Na<sup>+</sup>-H<sup>+</sup> Exchanger (NHE). Various protein kinases regulate NHE, including extracellular-signal regulated kinase (ERK), which is required for phenylephrine (PE) -induced NHE activation. We are now investigating how additional signaling intermediates play critical roles in NHE activation. One such molecule, Phospholipase C $\beta$  (PLC $\beta$ ) was examined using several different experimental techniques. Normally, 100  $\mu$ M PE increased pH<sub>i</sub> 0.16  $\pm$  0.03 pH units. However, in the presence of the PLC-specific inhibitors neomycin, Et-18-OCH<sub>3</sub>, and U-71322, pH<sub>i</sub> only increased 0.05, 0.01, and 0.02 pH units, respectively. A concomitant reduction in ERK activity was also

observed. To emphasize the role of PLC, two mutant cell lines depleted in PLC activity, 2A-4b and D1-9b, were used. Upon PE addition, pH<sub>i</sub> increased only 0.04  $\pm$  0.02 and 0.05  $\pm$  0.02 pH units, respectively. PE-stimulated ERK activation was also dramatically reduced in both mutant cell lines. Finally, to further confirm the necessity for PLC $\beta$ , 2A-4b and D1-9b cells were transfected with PLC $\beta$ 1, 2, and 3. Following PLC $\beta$ 1 transfection, both cell types again displayed ERK and NHE activity similar to the displayed CCL39 response. This work further demonstrates the critical role of PLC $\beta$  in  $\alpha$  adrenergic signaling.

## 73

**Title:** Parent-Child Communication Program: Case Study 7

**Presenter(s):** Heather Arneson, Andrea Fischer

**Department:** Speech/Language/Hearing Science

**Advisor:** Louis De Maio

**Abstract:** This presentation is one of seven case studies performed on the effect of the Parent-Child Communication Program (PCCP) in a mother of a child with delayed language. The study examined the mother's use of initiations and response patterns, and use of questions before and after training.

## 74

**Title:** Parent-Child Communication Program: Case Study 2

**Presenter(s):** Amy Johanson, April Frolek

**Department:** Speech/Language/Hearing Science

**Advisor:** Louis De Maio

**Abstract:** This presentation is one of seven case studies performed on the effect of the Parent-Child Communication Program (PCCP) in a mother of a child with delayed language. The study examined the mother's use of initiations and response patterns, and use of questions before and after training.

## 75

**Title:** Assessment of the Impact of Human Development on the Biotic Integrity of Lotic Systems in the Lake Agassiz Plain Ecoregion

**Presenter(s):** Matt Hammes

**Department:** Biology

**Advisor:** Brian Wisenden

**Abstract:** Biotic integrity refers to an ecosystem's ability to maintain a community of organisms that closely resemble those that occur in natural environments. Understanding the impact of human development on the biotic integrity of rivers and streams can be critical to the preservation of natural species and their habitats. A common way to measure the biotic integrity of a lotic system is to use an Index of Biotic Integrity (IBI). An IBI uses several variables called "metrics" to measure the biotic integrity of a lotic system, and assigns a numeric score. Higher IBI scores indicate a higher level of biotic integrity. This study uses an IBI prepared by the U.S.

Environmental Protection Agency for the Lake Agassiz Plain Ecoregion. Indices of biotic integrity were calculated at various locations on several lotic systems in the Lake Agassiz Plain Ecoregion using data collected by the Minnesota Department of Natural Resources during the summers of 2000 and 2001. The IBI scores were calculated upstream and downstream of sites of human development on these lotic systems. The calculated IBI scores were then used to evaluate the impact that human development has had on the biotic integrity of the lotic systems.

## 76

**Title:** Preparation of 1-Bromo-2-Catecholborylethene for use in Boron Neutron Capture Therapy

**Presenter(s):** Lisa Hansen, Michelle Johnson

**Department:** Chemistry

**Advisor:** Gary Edverson

**Abstract:** Reactions between trimethyl[silyl]actylene, B-Bromo-9-borabicyclo[3,3,1]nonane (B-Br-9-BBN) and B-bromocatechol borane have been studied in an attempt to synthesize a carbon-carbon double bond with a boron and a bromine atom cis to each other. The resulting compound, 1-bromo-2-catecholborylethene, will then be used to prepare a uracil base derivative containing a boron. The uracil nucleoside can then be tested for use in boron neutron capture therapy (BNCT), a method used for treating certain types of cancer.

## 77

**Title:** Time and Salvation in William Faulkner's *The Sound and the Fury*

**Presenter(s):** Brandon Baker

**Department:** English

**Advisor:** Sandra Pearce

**Abstract:** In his novel *The Sound and the Fury*, William Faulkner establishes Benjy as a sort of Christ figure. He builds on this notion throughout the story, eventually coupling it with a distorted view of time that frees the salvation Benjy represents from the constraints of past, present and future, thus imbuing this apparently gloomy novel with some semblance of hope.

## 78

**Title:** The Effects of Citric Acid Cycle Regulators on the Interactions Between Citrate Synthase and Malate Dehydrogenase

**Presenter(s):** Jarrod Heck, Anna Naig

**Department:** Biology/Chemistry

**Advisor:** Joseph Provost

**Abstract:** No abstract submitted.

## 79

**Title:** The Illusion of Disillusionment in Joyce's "Araby"

**Presenter(s):** Jennifer Rudnick

**Department:** English

**Advisor:** Sandra Pearce

**Abstract:** I will be presenting a paper on "Araby," a short story from James Joyce's *Dubliners*. The thesis of my paper reads as follows: "Araby's" youthful yet knowledgeable narrator does not simply stumble upon a momentous epiphany; he foreknowingly awaits man's forlorn destiny; innocence ceases to exist.

## 80

**Title:** Building a Device to Test Human Skin Conductance During Functional Magnetic Resonance Imaging

**Presenter(s):** Matthew Holzwarth

**Department:** Physics and Astronomy

**Advisor:** Ananda Shastri

**Abstract:** We designed a device to measure human skin conductance responses during functional Magnetic Resonance Imaging (fMRI). fMRI is used to study correlations between a stimulus and resulting brain activity. This device consists of a Wheatstone bridge, differential amplifier, and a low pass filter. The subject is connected to the bridge circuit by a pair of electrodes attached to the subject's palm. This circuit is connected to a computer where the signal is processed. Because the MRI scanner produced higher than acceptable levels of electrical interference in a prototype circuit, we added additional amplification and filtering stages. We will demonstrate that these modifications reduce scanner interference to acceptable levels.

## 81

**Title:** The Inversion of Biblical Tradition in William Faulkner's *The Sound and the Fury*

**Presenter(s):** Jessie Johnson

**Department:** English

**Advisor:** Sandra Pearce

**Abstract:** Whether a Compson by blood or years of servitude, theirs is a family haunted by scripture. The actions of Caddy and Quentin parallel the most significant events of the Old and New Testaments: the fall of mankind and the death of Christ. Where Caddy mirrors Eve in causing the downfall of her family, Quentin is a tragic Christ figure in his almost ritualistic suicide. In Faulkner's cryptic novel *The Sound and the Fury*, the Compson family is an inverted reflection of biblical tradition, doomed rather than saved.

**82**

**Title:** Ionospheric Disturbances

**Presenter(s):** Matthew Saarion

**Department:** Physics and Astronomy

**Advisor:** Linda Winkler

**Abstract:** We are analyzing the ionosphere by examining GPS signals. This involves the processing of GPS signals into a usable form and examining what frequencies the signal is composed of. We are hoping to correlate disturbances in the ionosphere to fluctuations in the Earth's magnetic field.

**83**

**Title:** Fluctuations in the Earth's Magnetic Field

**Presenter(s):** Cable Hren

**Department:** Physics and Astronomy

**Advisor:** Linda Winkler

**Abstract:** Studying the fluctuations in the earth's magnetic field using magnetometers and using the data that we have found, we hope to see if there is a correlation between the changes in the magnetic field with disturbances found in the ionosphere.

**84**

**Title:** Who Needs Calculators: Let's Use our Heads!

**Presenter(s):** Matt Oberlander, Anthony Simonson

**Department:** Math

**Advisor:** Lian Ng

**Abstract:** We will be presenting mathematics methods or techniques that can be used as alternatives to calculators. These methods or techniques can quickly and easily be done on paper or in our heads. We hope to simplify complex mathematics problems that many students would otherwise use a calculator to do.

**85**

**Title:** Atmospheric Turbulence and the Darkening Sky: A Forecast into Chandler's Emotional Upset in Joyce's "A Little Cloud"

**Presenter(s):** Krista Reiner

**Department:** English

**Advisor:** Sandra Pearce

**Abstract:** Amid the paralytic atmosphere of Joyce's "Dubliners" floats the story "A Little Cloud," a title taken from I Kings 18:44: "I saw a little cloud no bigger than a man's hand, coming from the sea." In I Kings, this "little cloud" precedes the storm that quenches the dry, immoral earth of King Ahab's Israel. Though Israel's drought compares to the spiritual wasteland of Joyce's Dublin, the storm that hits Chandler's world is not the type Israel receives. William Tindall inquires, "What is [Chandler's] little cloud, precisely, and what does it portend: increasing darkness or saving rain?"(27) Chandler's little cloud emerges in the form of a man whose cosmopolitan nature personifies the characteristics of a cloud, a man by the name of Ignatius Gallaher. Throughout Joyce's story, Gallaher's success, worldly atmosphere, and personal rejection combine to produce the little cloud generating Chandler's emotional storm.

**86**

**Title:** The Evolution of Mexican Cinema

**Presenter(s):** David Jons

**Department:** Spanish

**Advisor:** Benjamin Smith

**Abstract:** This presentation will provide a brief history of Mexican Cinema, from its birth to the present, focusing on the influence of the Mexican government in the cinematic industry.

**88**

**Title:** Parent Child Communication Program: Case Study 1

**Presenter(s):** Jessica Nuffer, Kelly Taylor

**Department:** Speech/Language/Hearing Science

**Advisor:** Louis De Maio

**Abstract:** This presentation is one of seven case studies performed on the effect of the Parent-Child Communication Program (PCCP) in a mother of a child with delayed language. The study examined the mother's use of initiations and response patterns, and use of questions before and after training.

**89**

**Title:** The Perfect Smile

**Presenter(s):**

**Department:** Humanities

**Advisor:** Helen Sheumaker

**Abstract:** Have you ever looked in a Cosmopolitan, Seventeen, or any kind of magazine with people in them? Well, I have and I have noticed that all the people have something in common "perfect teeth." Foucault states, "A body is docile that may be subjected, used, transformed, and improved." Come to find out more about Foucault's theory and how it is related to our society today!

**94**

**Title:** Comparison of population characteristics and morphological features of painted turtles from two sloughs in western Minnesota

**Presenter(s):** Candice Zemlicka, Deanna Thompson, Joanna Schmit

**Department:** Biology

**Advisor:** Donna Bruns Stockrahm

**Abstract:** Painted turtles (*Chrysemys picta*) were live-trapped during the summer and early fall of 2001 in two sloughs in Clay County, Minnesota, to compare population characteristics and morphological features. Both sloughs have undergone rapid expansion in the past several years. The larger slough has been in existence for over 30 years, whereas in 1997 the smaller slough was very shallow and less than 10 m in diameter. For each captured turtle, outer scutes were notched for individual identification. Turtles were weighed, sexed, and measured for length and width of carapace, then released. Data for 250 turtles were analyzed, with 43 males and 28 females (1.54:1) from the smaller slough and 95 males and 84 females (1.13:1) from the larger slough. Overall, turtles of both sexes were larger in the larger slough for all measurements.



with the differences being more pronounced in females. A larger proportion of smaller females occurred at the smaller slough, with 53.6% (15/28) being below 400 g compared with only 10.7% (9/84) below 400 g at the larger slough. A canonical discrimination analysis using the variables weight, length, and width showed significant separation ( $P < 0.0001$ ) between the males and females within the same slough for both sloughs. The same test showed significant separation when comparing females ( $P < 0.0001$ ) between sloughs and when comparing males ( $P < 0.0019$ ) between sloughs. Overall, our results indicated that the population of turtles in the smaller slough was morphologically smaller and presumably younger than the population in the larger slough.

## 95

**Title:** MSUM Student Views on the Smoking Ban  
**Presenter(s):** Leanna Stowman, Dawn Gehrke, Doreen Cerkowniak  
**Department:** Social Work  
**Advisor:** Shawn Ginther  
**Abstract:** No abstract submitted.

## 96

**Title:** Does Gender Influence MSUM Student Perception of "Date Rape?"  
**Presenter(s):** Deborah Erickson, JoAnn Walker  
**Department:** Social Work  
**Advisor:** Shawn Ginther  
**Abstract:** This study questioned whether the commonly held social-psychology and feminist theories, which maintain men and women have substantially different perceptions and definitions of appropriate sexual behaviors and significantly differing opinions concerning what constitutes "date rape," holds true on the MSUM campus. Research methods included popular and professional literature review and a convenience sampling taken in Comstock Memorial Union during the noon hour of the Fall 2001 semester. The sample demographics were similar to the MSUM student body demographics in age, race and gender.

## 97

**Title:** The Conflict in Sierra Leone, Africa  
**Presenter(s):** Bill Heinis  
**Department:** Political Science  
**Advisor:** Andrew Conteh  
**Abstract:** This presentation looks at the conflict in Sierra Leone Africa. The causes of this conflict both historical and modern will be discussed. This presentation will furthermore analyze the detrimental consequences this conflict has on a regional and global scale. Most importantly, possible solutions to resolve this issue will also be presented.

## 98

**Title:** The Elderly and Depression  
**Presenter(s):** Marisa Johnson, Alicia Abentroth, Brandi Zahn  
**Department:** Sociology  
**Advisor:** Sue Humphers-Ginther  
**Abstract:** The purpose of our study is to research depression in people who are 65 and older and live in long-term care facilities. Some methods of research we will be using are personal interviews, the General Social Survey, and information from professional literature. The resulting data will have implications the number of elderly that are depressed, living in long-term care facilities.

## 99

**Title:** Demonstration of DNA damage using the CometAssay.  
**Presenter(s):** Jeremy Grabinger , Sara Larson  
**Department:** Biology  
**Advisor:** Michelle Malott  
**Abstract:** DNA damage from exposure to adverse environmental conditions such as ultra-violet (UV) radiation and mutagenic chemicals is known to lead to disease and cancer. One way to detect such damage is with a single cell gel electrophorophoresis (SCGE) procedure known as the CometAssay. The CometAssay can detect DNA breaks in individual mammalian cells. This presentation will describe the use of the CometAssay to detect DNA breakage after cells have been exposed to UV light. In our experiment, UV-treated cells will be embedded in agarose on a microscope slide, the cell membranes lysed and the slides placed in an electric field. The broken pieces of DNA will migrate out of the cell towards the anode during this process, causing the cell and its DNA to resemble a comet. The more damaged the DNA is, the more will be released from the cell and the longer the comet tail will be. The DNA will be stained with a dye allowing us to use a fluorescent microscope and a computer imaging program to visualize the comets. Our hypothesis is that longer exposures of cells to UV will result in longer comet tails.

## 100

**Title:** The Perception/Misperception of the Perfect Body  
**Presenter(s):** Lisa Moon  
**Department:** Mass Communication  
**Advisor:** Susanne Williams  
**Abstract:** Body image involves our perception, imagination, emotions and physical sensations about our bodies. My presentation deals with how the media has affected a teenager's perception or misperception of the perfect body.

## 101

**Title:** MSUM Forensics Showcase: Public Speaking

**Presenter(s):** Amanda Calsbeek, Alicia Hanson, Valerie Waldo, Jennifer Hoepfner

**Department:** Theatre Arts

**Advisor:** David Gaer

**Abstract:** The MSUM speech and debate team has qualified several public address events to the National Tournament. This showcase will provide the audience with an opportunity to view these presentations, and to participate in an open forum/question answer period.

## 102

**Title:** MSUM Forensics Showcase: Interpretation of Literature

**Presenter(s):** Rachel Deibert, Reed Halvorson, Amanda Calsbeek, Carrie Bican, Jennifer Hasbargen

**Department:** Theatre Arts

**Advisor:** David Gaer

**Abstract:** The MSUM speech and debate team has qualified several students in oral interpretation to the National Tournament this April. This showcase will provide a performance and an open forum/question answer session for audience members.

## 103

**Title:** Parent-Child Communication Program: Case Study 3

**Presenter(s):** Shannon Buck, Joy McKenzie

**Department:** Speech/Language/Hearing Science

**Advisor:** Louis De Maio

**Abstract:** This study is one of seven case studies that analyzed the effects of PCCP training on a mother with a child having delayed language development. We analyzed mother's initiation and response patterns and use of questions before and after the training. We will present our results and interpretation of our data along with information from relevant literature.

## 104

**Title:** The Economics of HMO's

**Presenter(s):** Danny Pyatt

**Department:** Economics

**Advisor:** Oscar Flores

**Abstract:** I will look at health maintenance organizations, and their effects on insurance prices.

## 106

**Title:** Diffusion Activation Energy and Entropy of NiO Silicate Melts as a Window into Silicate Melt Structures

**Presenter(s):** Megan Sawarynski

**Department:** Anthropology and Earth Sciences

**Advisor:** Russell Colson

**Abstract:** We did two different experiments using differential pulse voltammetry to measure the relative change in diffusion rate with temperature changes and the relative change in reduction potential with changing temperatures. With this information we constructed a model interpreting melts in terms of their basic non-fixed-component character. A component of a melt is a crystal-like structure inside the melt made of different elements. As the temperature changes so do the structures inside the melts. Our interest in doing these experiments is to determine at what temperature structural changes occur and to examine whether these structures are related to the formation of macroscale crystals in the melt.

## 107

**Title:** Differences among Gender's Reactions to Stressful Traumatic Events

**Presenter(s):** Janelle Wald, Amber Kuznia, Aletta Schultz

**Department:** Sociology

**Advisor:** Sue Humphers-Ginther

**Abstract:** Stress has played a central role among the health of men and women in today's society. The purpose of our study is to compare the way we are affected by stress according to our gender. At the present time we do not know all of the factors that are related to stress and gender. However, we are looking at the role of traumatic events such as unemployment, divorce, and the loss of a sibling, spouse, or parent that affect the health of men and women. We will compare the relationships of people who have experienced traumatic events in their lives versus those that haven't experienced traumatic events. Then we will compare the reactions of the men and women. The resulting data from the General Social Survey, which is one of our sources, will have implications for how men and women react differently to traumatic events.

## 108

**Title:** Reliability of Eyewitness Testimony: The Influence of Race and Milieu on Perceptual Accuracy

**Presenter(s):** Fredrik Leinfelt

**Department:** Psychology

**Advisor:** Willie Hallford

**Abstract:** One of many factors that can have an effect on the accuracy of eyewitness memory is the setting of the witnessed event and the race of the involved individuals. Sixty participants were tested. The results suggest greater accuracy when the same race is involved and when emotions are low.

## 109

**Title:** Sex differences in the use of color on mental rotations tasks

**Presenter(s):** Karissa Schmoll

**Department:** Psychology

**Advisor:** Willie Hallford

**Abstract:** This experiment will examine the use of color on tasks of spatial abilities. Four groups will be created: Males who use color on a mental rotations task; males who do not use color; females who use color; and females who do not use color. It is hypothesized that the scores of females who use color will be significantly higher than the scores of females who do not use color. Men's scores will not differ significantly due to the use of color. It is also being hypothesized that men's scores will remain better than women's scores regardless of the use of color.

## 110

**Title:** Attitudes and Perceptions Toward the Elderly and Self-Aging

**Presenter(s):** Lindsay Doran

**Department:** Psychology

**Advisor:** Willie Hallford

**Abstract:** This study investigated college student's attitudes and perceptions toward the elderly and self-aging. I viewed these differences in perceptions in terms of attribution theory, which holds that when we succeed at a task we tend to attribute causality to ourselves; when we fail, causality is considered more attributable to factors in the environment, the situation, or the actions of others. Participants were tested using the Stereotypes Toward Older People Scale (1994). Based upon previous findings by Kremer (1988) I hypothesized that college students will have a more positive view of self-aging and attribute more affirmative characteristics to themselves when compared to their perceptions of the elderly population in general.

## 111

**Title:** Category-Specific Naming in Normal Subjects: Implications for Diagnosis of Dementia of the Alzheimer Type

**Presenter(s):** Darcy Frisinger

**Department:** Speech/Language/Hearing Science

**Advisor:** LaRae McGillivray

**Abstract:** The elderly population is the fastest growing segment of the population, and will continue to grow faster than any other age group during the next several decades. A common complaint among the elderly is difficulty finding the appropriate words when communicating with others. Difficulty in word finding, especially naming, is also a characteristic observed early in patients with Dementia of the Alzheimer Type (DAT). Therefore, early diagnosis of DAT is difficult. Much research has examined naming impairments as a result of DAT. Researchers have found a naming discrepancy to exist within the semantic categories of living (e.g., animals, vegetables) and nonliving (e.g., tools, furniture) items. The most common pattern is for patients to be more impaired for living stimuli than nonliving stimuli; however, the opposite pattern has also been observed. Therefore, category semantic naming impairments may be a possible means of identifying

DAT in elderly individuals. However, the results of these studies remain contradictory because not all studies have controlled their stimuli for attribute measures (e.g., word frequency, familiarity, visual complexity), which may affect the results. Some studies have found that normal subjects (i.e., both young and elderly adults) also display a naming discrepancy between living and nonliving items, which indicates a lack of a control group in the literature. The purpose of this study is to determine if the living/nonliving discrepancy exists in young and elderly normal adults in both confrontation naming and generative naming tasks, while controlling for attribute measures. One would expect normal adults in the absence of cognitive impairment to perform equally well on naming tasks of living and nonliving items. However, if a discrepancy does exist in normal adults, it would not be valid to say that category-specific semantic naming impairments were only the result of DAT. Therefore, category-specific naming tasks may not be effective in differentiating normal subjects from those with Alzheimer's disease.

## 112

**Title:** Color Clothing Preferences

**Presenter(s):** Mike OMalley, Melissa Truscinski

**Department:** Psychology

**Advisor:** Willie Hallford

**Abstract:** This experiment will examine possibilities of an interaction between mood, color preference, and gender. To accomplish this, we will administer four questionnaires to participants, which incorporate these variables. It is predicted that higher arousal aspects of mood such as activeness, anger, and anxiety will be more salient in participants whose color preference tends to include lighter shades of clothing. In addition, the same participants should be more likely to prefer brighter colors (Red, Orange, Yellow) in the color spectrum. We would also hypothesize that a gender difference would occur in color clothing preference, with males choosing blue and green more frequently, while females tend to like red and yellow.

## 113

**Title:** The Effect of Ration on Club Cell Proliferation in Darters

**Presenter(s):** Amber Corwin

**Department:** Biology

**Advisor:** Brian Wisenden

**Abstract:** Predator-prey interactions are very important in the day-to-day life of all animals, as well as being a major selective force of natural selection over time. Fishes in the superorder Ostariophysi (minnows, catfish, and suckers et al.) have special cells (club cells) in their skin that contain an alarm cue that is released when the skin is damaged by a predator. When detected these alarm cues cause the fish to exhibit anti-predator behavior. Analogous skin cells occur in darters, perch-like fishes that are not in the superorder Ostariophysi. We will compare the cell density of study fish fed a small amount with cell density of study fish fed a large amount, to determine if ration affects club cell density. We will also determine if club cell density is uniformly distributed on the back, flank and belly of darters.

## 114

**Title:** Preference Between Two Black & White Photographs: Gestalt Laws in Composition and Perception

**Presenter(s):** Kara Miller

**Department:** Psychology

**Advisor:** Willie Halford

**Abstract:** No matter how art affects the viewer, laws of art and the content cannot be separated; laws describe how the content is created (Brown, 1999). Gestalt laws of proximity, similarity, continuity, and closure have been an aid not only to the field of psychology but also to that of the art world. Franklin et al. (1993) found support for artists' compositions leading the audience in their investigation of title affect on viewers. Participants interpreted the paintings and used pointers, which were recorded with a computer program in order to interpret spatial organization reflected by pointing patterns. Title influenced what viewers said about the images, and served as guides to interpretation. The analyses of pointing patterns found that patterns (pointing) did not vary with title, pointing depends on composure of painting. It's predicted that when participants view two black and white photographs, one using Gestalt laws and the other not, those individuals will prefer the photo that incorporates art principles.

## 115

**Title:** All By Myself: Self-Written and Performed Theatrical Work

**Presenter(s):** Reed Halvorson

**Department:** Theatre Arts

**Advisor:** Theresa Carson

**Abstract:** Performance of a self-written, one man theatrical work based on embellishments of personal experiences. It is a story of a young person's struggle in a world of adults and the will to forge ahead into success. Although performative in nature, discussion that follows will hopefully explore the methods and difficulties of expression both in the performance and the text, and how the combination proves a challenge, and something of human interest within and outside of the performance realm.

## 116

**Title:** Benjy's Section: Told by an Idiot, Signifying Everything

**Presenter(s):** Andrea Aberle

**Department:** English

**Advisor:** Sandra Pearce

**Abstract:** This essay examines "Benjy's Section" in William Faulkner's *The Sound and the Fury*, and argues that the section shouldn't be dismissed as jumbled and uninformative just because it is narrated by the Compson's mentally challenged son. Through Benjy's confusing recollections he aptly introduces us to the Compson family and provides key information regarding character development and relationships.

## 117

**Title:** An Examination of the Influence of Race on Adoption Decisions.

**Presenter(s):** Natalie Henes

**Department:** Sociology

**Advisor:** Janice Fiola

**Abstract:** This analysis focuses on the influence of race on adoption decisions. Over time, transracial adoption has evolved into a social dilemma and today remains a controversial issue. This paper will give a description of the history of transracial adoption in the U.S., and varied legislative acts and other policies related to adoption considerations. The core debate regarding transracial adoption centers around concerns about cultural preservation and "the best interest of the child". The compelling arguments for and against transracial adoption ultimately reveal underlying racial attitudes. This paper will examine transracial families' experiences today as well as the perspective of parents who wish to adopt. An overview of the foster-care system will be included, paying close attention to racial composition and the displacement of children exiting foster-care when they reach the age of eighteen.

## 119

**Title:** Only the Lonely Know: The Effects of Observer's Loneliness on Perceptions of a Lonely Individual

**Presenter(s):** September Luitjens

**Department:** Psychology

**Advisor:** Christine Smith

**Abstract:** Lau & Gruen (1992) have found that lonely men are more negatively viewed, and thus less attractive, than lonely women and that women are harsher judges of lonely people. Further research has found that nonlonely observers are harsher evaluators of lonely people (Lau & Kong, 1999). Eighty-four adult participants from a mid-western undergraduate university participated. The UCLA Loneliness Scale was used to determine participants' level of loneliness. A scenario of a lonely target, male or female, and the Interpersonal Attraction Scale were used to determine observer's perceptions of the lonely target. A 2(observer sex) x 2(level of loneliness) x 2(target sex) between subjects MANOVA found no significance,  $F(1,77) < 1$ ,  $p > .05$ .

## 120

**Title:** Gender and Women's roles in the Holocaust

**Presenter(s):** William Dahlin

**Department:** History

**Advisor:** Christopher Corley

**Abstract:** My presentation will provide a glimpse into modern historians' perspectives on the issue of gender and the Holocaust. The issue of blame in the Holocaust has been the topic of many heated debates, and the issue of Women's roles in the Holocaust is no exception. Highlighting the arguments of Giesela Bock and Claudia Koontz, I will provide two separate spheres from which Holocaust historians look at the Holocaust and deal with issues of blame.

## 121

**Title:** Issues Concerning Mentally Handicapped Individuals

**Presenter(s):** Summer Stores

**Department:** Sociology

**Advisor:** Janice Fiola

**Abstract:** How does society react to those who are mentally handicapped? In this paper, I analyze the history and contemporary status of the rights of individuals with handicaps through a review of theoretical and policy issues in the literature. I also conducted a survey of opinions of professionals in the field as well as members of the public regarding various issues concerning the mentally handicapped.

## 122

**Title:** Effect of Photorespiration Metabolites on Photosynthesis in Isolated Sinach Chloroplasts

**Presenter(s):** Heather Boe

**Department:** Biology

**Advisor:** Chris Chastain

**Abstract:** No abstract submitted.

## 123

**Title:** Investigation of Drift in Down-hole Geophysical Instrumentation

**Presenter(s):** Aaron Fogel, Cameon Eisenzimmer

**Department:** Anthropology and Earth Sciences

**Advisor:** Rinita Dalan

**Abstract:** Our presentation focuses on instrument drift of a down-hole magnetic susceptibility logger. This instrument measures the magnetic susceptibility of the soil profile down a small diameter (1 in.) core-hole. The logger is a prototype instrument that will be developed into a commercial product. To date drift has been corrected for by zeroing the instrument in the field prior to each measurement, a time consuming process. We are exploring the possibility of taking continuous measurements in the field and later applying a standardized drift correction. To this end we have analyzed continuous and non-continuous measurements from two different archaeological sites, Hopeton Earthworks (OH) and the Rustad site (ND), as well as data from controlled experiments. If the continuous drift corrected measurements can be used, then this instrument would allow more accurate site surveys, a better understanding of the soil profile, and a more cost-and time-effective manner of archaeological investigation.

## 124

**Title:** Magnetic Susceptibility for Understanding Prehistoric Earthworks

**Presenter(s):** Kelsey Lowe

**Department:** Anthropology and Earth Sciences

**Advisor:** Rinita Dalan

**Abstract:** This poster presentation focuses on the construction of earthworks by peoples of the Hopewell Culture. I will specifically consider the Hopeton Earthworks, located in Ross County, Ohio. The Hopeton Earthworks consist of a large circle and a large square, along with a long pair of straight lines and several smaller circles. My project involves a number of soil samples collected from the south wall and the southwest corner of the large square. I have conducted magnetic susceptibility studies of these samples to understand the construction of this earthwork as well as post-formation processes.

## 125

**Title:** The Sibley Expedition of 1863

**Presenter(s):** Susan Kudelka

**Department:** History

**Advisor:** Steven Hoffbeck

**Abstract:** My presentation will discuss the Dakota Conflict of 1862, which prompted the Sibley Expedition of 1863. I will discuss the two major battles of the Sibley Expedition, the Battle of Big Mound and the Battle of Stoney Lake. General Henry Hastings Sibley was the first governor of Minnesota. He was asked to lead this expedition, capturing the Indians who had fled into Dakota Territory after they had massacred numerous white settlers in the New Ulm, Minnesota area.

## 126

**Title:** The Lolita Syndrome: The Media, the Sexualization of Children, and Pedophilia

**Presenter(s):** Jaime Wendlick

**Department:** Sociology

**Advisor:** Janice Fiola

**Abstract:** My research is on the sexualization of children and young adults through the media, and how it relates to pedophilia. I am doing a content analysis of different forms of media, such as television, movies, music, and print, and I will show how children are exposed to sexual images, and how they are sexualized through this. Research and results of my research are forthcoming.

## 127

**Title:** Mapping Activity Variations for Ru<sub>2</sub>O<sub>3</sub> in Lunar Volcanic Green Glass Analogs Using Differential Pulse Voltammetry

**Presenter(s):** Kathleen Malum

**Department:** Geology

**Advisor:** Russ Colson

**Abstract:** Variation in the composition of a melt can have large effects on the peak position. Using differential pulse voltammetry, we are mapping variations in activities for a variety of electroactive species as a function of compositional variation for compositions centered around a green glass analog. We report here variations in Ru<sub>2</sub>O<sub>3</sub> activity resulting from variations in Al<sub>2</sub>O<sub>3</sub>, CaO and MgO concentrations. These variations were compared to results previously found with Ni.

## 128

**Title:** NAFTA- It's benefits and hardships to Mexican society.

**Presenter(s):** Vanessa Eaton

**Department:** Spanish

**Advisor:** Benjamin Smith

**Abstract:** This presentation is a look at the cultural/environmental/social issues involved with globalization in Mexico. The focus will be on the NAFTA agreement between Canada, the US, and Mexico. Who benefits from these agreements and how do they hurt/help the average Mexican worker? The Power Point presentation will include statistical data, photography, and first-hand experience/research.

## 129

**Title:** The Effects of Expert Celebrity Endorsers on Consumer Attitudes

**Presenter(s):** Anne Sheldon

**Department:** Psychology

**Advisor:** Gary Nickell

**Abstract:** This study examined some of the possible effects that product endorsers have on consumer attitudes. Participants were randomly assigned to one of four conditions, with status of the endorser (celebrity vs. non-celebrity) and expertise of the endorser (expert vs. non-expert) as the independent variables. Participants viewed a print advertisement and completed a questionnaire to determine the effectiveness of the ad, as well as the endorser depicted in the ad. Based upon prior research by Petty, Cacioppo, and Schumann (1983), it was hypothesized that expert celebrity endorsers would produce greater levels of believability, likability, and overall effectiveness than non-expert, non-celebrity endorsers.

## 130

**Title:** Wal-Mart vs. Small Town Industry

**Presenter(s):** Jennifer Hensel

**Department:** Economics

**Advisor:** Oscar Flores

**Abstract:** This presentation is on the effects Wal-Mart has on small town industries.

## 131

**Title:** The Question of Character: A Comparison of Francis Beaumont's Parodying Edmund Spenser's Red Cross Knight in "The Knight of the Burning Pestle"

**Presenter(s):** Rhonda Portmann

**Department:** English

**Advisor:** Sandra Pearce

**Abstract:** A contrast and comparison of Edmund Spenser's Red Cross Knight (aka Saint George) from The Faerie Queen and the numerous "George" characters present in Francis Beaumont's "The Knight of the Burning Pestle" and how each represents a part of RCK's character and parodies it.

## 132

**Title:** Domestic Abuse and Social Class: An Unhealthy Relationship

**Presenter(s):** Stephanie Shoemaker

**Department:** Sociology

**Advisor:** Susan Humphers-Ginther

**Abstract:** I will take an in-depth look at the role social class plays in the incidents of domestic abuse across the United States as well as a person's inclination and thoughts about domestic abuse based on the social class of which they are a part.

## 133

**Title:** Manure-the Next Energy Resource

**Presenter(s):** Alicia Hanson

**Department:** Speech Communication

**Advisor:** Dave Gaer

**Abstract:** Animal waste is gaining popularity as our next energy resource. Believe it or not, at least one college campus has jumped on the bandwagon and now uses it to heat their facilities! A machine has been invented that will turn manure into energy while removing 94% of the odor. Learn about how and why we should make moodoo a priority in this presentation, which qualified for the 2002 American Forensics Association National Individual Events Tournament held at Bradley University.

## 134

**Title:** The Phosphorylation of FKHL1, After Exposure to UV Radiation

**Presenter(s):** Shanna Rix, Christa Randklev, Julie Vogel

**Department:** Biology/Chemistry

**Advisor:** Michelle Malott

**Abstract:** Cells respond to their environment by translating extracellular signals to an intracellular response in the nucleus. Intra-cellular signaling pathways are the link between the extra-cellular environments and the nucleus. Abnormalities in these signaling pathways can lead to tumorigenesis and cancer. The activation of one such pathway, the phosphatidylinositol-3-kinase (PI3K) pathway, regulates cell growth. This regulation occurs through the phosphorylation of a number of different proteins such as Akt, SGK, and FKHL1.

FKHRL1 is a transcription factor that regulates the activity of genes involved in promoting cellular death. We are interested in understanding the regulation of this transcription factor in response to cell stress. One type of cell stress is exposure to UV radiation which is known to cause the phosphorylation of p38MAPK. The phosphorylation of FKHRL1 in response to UV radiation has yet to be examined. We hypothesize that FKHRL1 will be phosphorylated in response to UV radiation and that this phosphorylation is the result of the activity of two other proteins, p38MAPK and SGK. To test this hypothesis, HeLa and CCL39 cells will be stimulated with various levels of UV radiation and phosphorylation of FKHRL1, Akt, SGK and p38MAPK will be examined by western blot analysis. Preliminary data indicates that the phosphorylation of p38MAPK corresponds to the phosphorylation of FKHRL1 when exposed to UV radiation.

### 135

**Title:** Noninvasive genotyping of prairie dogs using hair samples

**Presenter(s):** Daniel McEwen

**Department:** Biology

**Advisor:** Michelle Malott

**Abstract:** Due to decreases in population, black-tailed prairie dogs (*Cynomys ludovicianus*) recently have been considered for protection under the Endangered Species Act. Species that are subjected to drastic decreases in number can experience a negative genetic phenomenon known as inbreeding depression. Inbreeding depression reduces overall fitness in animals, making populations susceptible to further declines in number as well as disease. Beginning in the summer of 2002, we will be measuring the levels of inbreeding depression in a colony of black-tailed prairie dogs in Theodore Roosevelt National Park, ND. Analysis will require tissue samples to be taken from a relatively large number of animals for DNA extraction and genotyping. Presently, obtaining tissue for prairie dog genotyping involves invasive techniques such as cutting skin and blood vessels from phalanges for blood samples, taking blood directly with a needle, or killing animals and processing their internal organs. We are presently developing a method whereby, in the field, DNA can be extracted noninvasively from hair. Using hair samples collected both from live prairie dogs at the Red River Valley Zoo and preserved museum specimens in the Biology department at Minnesota State University Moorhead, microsatellite sequences from isolated DNA have been amplified using polymerase chain reaction (PCR) with primer sequences previously identified from related species of ground squirrels. Genotyping of individual prairie dogs is being performed by examining genetic differences at 4 different microsatellite loci. We will continue to work on the protocol until May or June 2002 when fieldwork will begin. Hairs collected during fieldwork will be scored for genotyping during Fall and Winter 2002 and Spring of 2003 using the procedures outlined here. Genotypes will then be used in conjunction with other capture data to measure inbreeding depression among the animals.

### 136

**Title:** The African-American experience on predominately white college campuses.

**Presenter(s):** Jen Schoenfish

**Department:** Sociology

**Advisor:** Jan Fiola

**Abstract:** In this paper I will examine the African-American experience at three Midwestern campuses all of which are predominately Euro-American. Based on interview data, the issues discussed include: (1) how the students chose the school they did; (2) how they define their identity in the classroom and campus overall; (3) how attending a predominately white institution affects their personal relationships; and (4) what is one's personal expectations and goals of their college or university.

### 137

**Title:** The Use of Erotica Instead of Pornography to Socialize Our Children.

**Presenter(s):** Emily Nordwall

**Department:** Sociology

**Advisor:** Shannon Terry

**Abstract:** Pornography socializes men into a role of domination, with the resulting ramification of socializing women into a role of submissiveness. These roles may explain the relationship between the objectification, degradation and violence toward women and pornography. This paper explores the idea of using erotica to socialize children into egalitarian roles of sexuality.

### 138

**Title:** The Affect of Frequency Contours and Emotionality on individuals Preferences of Music.

**Presenter(s):** Anthony Emanuele

**Department:** Psychology

**Advisor:** Willie Hallford

**Abstract:** Based on Berlyne's 1974 theory, we prefer music that has moderate levels of arousal. In a finding by Pignatiello, Rasar, Elder and Camp (1989), which showed that elated mood states elicited higher levels of arousal than did depressed mood states, we are able to draw on Berlyne's theory to suggest that individuals will prefer music that is emotionally positive in nature. In a study by Throlson and Ellingson (1998), it was found that there is a gender difference in the frequency contours that we prefer in music; however, no studies have looked into whether or not the frequency contours within musical stimuli could have an effect on musical preference and aesthetic judgments. This study will look at preference differences in music of different emotionality and frequency contours.

## 139

**Title:** The Commedia dell'arte

**Presenter(s):** Jared Kolles, Justin Akers

**Department:** Theatre Arts

**Advisor:** Theresa Carson

**Abstract:** We will give a brief history on the Commedia and give examples of the stock characters.

## 140

**Title:** Music Therapy and its Effect on Children with Disabilities

**Presenter(s):** Heather Letcher

**Department:** Music

**Advisor:** Laurie Blunsom

**Abstract:** Music Therapy is a fairly new and rapidly growing part of the Alternative Therapies group. Music Therapy as a credited therapy practice started in the early 1950's focusing mainly on aiding WWII mental trauma victims and patients of mental hospitals. Today, due to considerable increases of research into the effects of music and Music Therapy, the field has grown so much that the prospective Music Therapist has an infinite number of options regarding career opportunities. This presentation will give a brief background on Music Therapy, give examples of the many different settings in which the Music Therapist may work, and then focus on the effects of Music Therapy with children who have disabilities.

## 141

**Title:** International Stock Portfolio Diversification

**Presenter(s):** Miroslav Stoichev

**Department:** Business Administration

**Advisor:** Rajiv Kalra

**Abstract:** The benefits of international diversification have been recognized for many years now. As the economies of the world move along unique patterns, investors could benefit and reduce the risk of their portfolios by spreading their assets across variety of countries. However, substantially higher risks and transaction costs may completely offset these benefits. After more than 40 years of academic studies, it is still unclear whether international diversification is beneficial or not. My study is aimed at evaluating the benefits of investing in foreign countries' stock markets considering historical data over the last ten years. It also looks at several different rebalancing strategies for international diversification.

## 142

**Title:** An Analysis of Prostitution: The Diverse Views of Legalization

**Presenter(s):** Elizabeth Johnson

**Department:** Sociology

**Advisor:** Jan Fiola

**Abstract:** This paper addresses the varying opinions on the legalization of prostitution. I will focus on a literature review of past studies, an analysis of various theoretical perspectives, a comparative analysis of laws applied state by state, and an analysis of public policy. Furthermore, attention will be given to the effects of interest groups and lobby groups. While both sides are addressed in this paper, I intend to focus on the positive effects of legalization.

## 143

**Title:** Hands-On Herpetology: experience a standards-based high school science curricula

**Presenter(s):** Tessa Lundrigan, Nathan Brager, Katy Garza-Bair

**Department:** Biology

**Advisor:** Alison Wallace

**Abstract:** Experience some sample activities from this new curricula designed to teach about conservation of all species through the investigations of the ever-popular "herps". Find out how these activities are aligned with national and MN science standards for middle and high school students.

## 144

**Title:** Exploring the World Using Protozoa: experience a standards-based high school science curricula

**Presenter(s):** Alicia Gulbranson, Brett Lehner, Jonathon Watkins

**Department:** Biology

**Advisor:** Alison Wallace

**Abstract:** Experience some sample activities from this curricula designed to teach of ecological and biological processes through the use of protozoan communities. Find out how these activities are aligned with national and MN science standards for middle and high school students.

## 145

**Title:** Human Genetic Variation: experience a standards-based high school science curricula

**Presenter(s):** Christine Olson, Christina Gerdes, Carrie Leopold

**Department:** Biology

**Advisor:** Alison Wallace

**Abstract:** Experience some sample activities from this new curricula developed by the National Institute of Health and the Biological Sciences Curriculum Studies. This curricula is designed to teach human genetics. Find out how these activities are aligned with national and MN science standards for middle and high school students.

## 146

**Title:** Prairie Planting Partnerships

**Presenter(s):** Bethany Lundgren, Ava-Gaye Simms, Alicia Gulbranson, Vian Abdulhakim

**Department:** Biology

**Advisor:** Alison Wallace

**Abstract:** We will describe several experiments in progress to determine the most successful ways to grow different species of prairie seedlings. The purpose for these experiments is to share our results with Moorhead Public School third grade classrooms, who are also growing seedlings in preparation for transplanting into a prairie restoration plot at the MSUM Regional Science Center. These experiments are looking at factors such as: effects of different cold stratification treatments on seedling hardiness, effects of tactile manipulation on seedling hardiness, effects of mycorrhizal (fungal) symbionts,



or effects of nitrogen-fixing bacteria on the growth of several native prairie plant species. We will also demonstrate a web site describing these experiments, and containing pictures, links, and prairie plant growing tips for the third grade teachers and students.

## 147

**Title:** Can Implicit Bias Be Influenced?

**Presenter(s):** Mark Jesinoski

**Department:** Psychology

**Advisor:** Willie Hallford

**Abstract:** "Defined as prejudice revealed in subtle, indirect ways, because people have learned to hide prejudiced attitudes in order to avoid being labeled as racist, modern racism is one way in which people express their prejudices and also why it is so difficult to measure prejudices accurately." (Aronson, Wilson, & Akert, 1999) Research over the decades has evolved, due to the transience in measuring and understanding the stereotypes people use, from focusing on explicit stereotypes (stereotypes people are consciously aware of), to implicit stereotypes (stereotypes expressed in the absence of conscious awareness). The Implicit Association Task is one widely accepted tool used to measure implicit reactions to stimuli. The presented research tested the effects of experimenter expectancy and new information on implicit bias using an Implicit Association Task. Results demonstrated that experimenter expectancy and new information had no significant effect on implicit reactions to racially pertinent stimuli, which demonstrates the rigidity of implicit biases.

## 148

**Title:** Holocaust Participants, Resisters and those who deny it

**Presenter(s):** Jody Larson

**Department:** Sociology

**Advisor:** Jan Fiola

**Abstract:** I am going to do an analysis of participation of individuals in the Holocaust. I will analyze explanations for the complicity or complacency of so many people given the knowledge of atrocities. I will also discuss those who did resist the Nazi regime and what distinguishes those individuals from the former. Finally I will discuss the phenomenon of continued Holocaust denial.

## 149

**Title:** Gender Differences in Spatial Task Performance

**Presenter(s):** Trisha Daigle

**Department:** Psychology

**Advisor:** Willie Hallford

**Abstract:** This study will attempt to examine gender differences in spatial task performance. Although previous research suggests a male advantage when it comes to spatial task performance, several factors have been identified that could affect these results. Test administration procedures and scoring techniques such as ratio scoring rather than overall number correct have been shown to affect the results (Goldstein et al, 1990), and women actually show no significant difference in spatial task performance when these

factors are accounted for. Furthermore, Sharps, Welton & Price (1993) found that non-cognitive factors affect spatial task performance according to gender. It is predicted that when the instructions are more gender-neutral and when the scoring procedures are accounted for, women participants will score as well on these tests as men participants.

## 150

**Title:** Boll Weevils, Watermelons, and the Whirlwind: Jason Compson's Story as a Retelling of the Book of Job in Faulkner's *The Sound and the Fury*.

**Presenter(s):** Jeff Nelson

**Department:** English

**Advisor:** Sandy Pearce

**Abstract:** "Isn't that the book about suicide, incest, and castration?" asked my uncle about Faulkner's novel *The Sound and the Fury*. "Yes," I said. But I'd add 'Hope' to that list too." .... The uncanny parallels between the nefarious Jason Compson (of *The Sound and the Fury*) and the God-fearing Job (of the Old Testament) suggest that Faulkner's morbid classic is a tale of hope.

## 151

**Title:** Disturbance cues in an adult amphibian: *Xenopus laevis*

**Presenter(s):** Jill Greenley, Aaron Hutcheson

**Department:** Biology/Chemistry

**Advisor:** Brian Wisenden Asoka Marasinghe

**Abstract:** Chemical cues are widely used to detect the presence of predation risk. Disturbed crayfish and darter fish release urinary nitrogen, and this cue is used by nearby members of their species to indicate predation risk. In this experiment, we tested to see if African clawed frogs, *Xenopus laevis*, secrete urinary nitrogen when disturbed. Our procedure tested for different amounts of ammonia with the frogs at rest and again when disturbed. We tested for ammonia from five frogs before and after a disturbance stimulus. If frogs use ammonia as a disturbance cue, we predict a pulse of ammonia when they are disturbed. The amount of ammonia released will then be used as a test cue in behavioral trials to confirm biological function as a disturbance cue. If so, then increased amount of ammonia will serve as a warning to other frogs of predation risk.

## 152

**Title:** Bison (bison bison) calf production and population structure in Theodore Roosevelt National Park in the North Dakota Badlands

**Presenter(s):** Michelle Bray, Heather Boe, Joanna Schmit, Thomas Bovee

**Department:** Biology

**Advisor:** Donna Bruns Stockrahm

**Abstract:** Calf production and population structure of the bison (Bison bison) herd was studied in the South Unit of Theodore Roosevelt National Park from 1998 to 2001. Our objective here is to compare our population data over successive years with data collected during the round-up in October 2000. Prior to the round-up, park personnel were concerned that too many bulls existed in the herd. We looked at calf production over the years to see if the high number of bulls in the herd was affecting the reproductive effort. In 1998, our highest count for the herd was 273 with calf production at 0.57 calves/cow. In 1999, the highest count rose to 350 with 0.63 calves/cow. In 2000, an incomplete count of the herd was 101 with calf production at 0.84 calves/cow. However, this number probably does not reflect true ratios. A complete pre-round-up census indicated 496 bison were in the park. At the round-up corrals, 211 were culled from the herd and 3 died, leaving 282 in the park. Calf/cow ratios at the round-up were 0.55 when all cows 1 year and older were counted. In 2001, the summer after the round-up, our best count for the herd was 308 with 0.65 calves/cow. However, these calves would have been conceived before the round-up. Our future research will track calf production and population structure after the round-up to determine its effects on herd dynamics.

## 154

**Title:** Ethics and International Relations: The Question of the Compatibility of War and Morality -- Can War Be Morally Justified?

**Presenter(s):** Kylene Kinnischtzke

**Department:** Philosophy

**Advisor:** David Myers

**Abstract:** War. A phenomenon as old as humanity itself, it certainly proves to be an ever-present component of the human condition. Despite its use as an 'ultimate settler of differences,' can violence at any level be acceptable? While morally justified violence may strike us as a contradiction, some theorists indeed assert that just wars exist. The continuation of a moral language for discussing such conflicts provides evidence of our efforts to rationalize war and its continued usage. Further, with types of warfare and its weapons constantly changing, as well as continual change in the international system in areas such as governance, what realities and options does this international system face concerning peace and conflict? Briefly surveying key definitions and arguments concerning such issues, this paper critiques the validity and applicability of Just War Theory, through an interdisciplinary approach that explores the limits of international politics and philosophy.

## 155

**Title:** Analysis of the City of Moorhead's Fire Rating

**Presenter(s):** Daniel Buchholtz

**Department:** Public Human Services Administration

**Advisor:** James Danielson

**Abstract:** Municipalities throughout our society are rated according to their fire fighting and response capabilities. Ratings can make a difference in the insurance rates paid by businesses and homeowners in different communities. The City of Moorhead wants to examine the costs, benefits and administrative challenges involved in possibly upgrading its fire rating. This policy analysis addresses these issues and will attempt to provide recommendations to the appropriate administrative and policy-making authorities.

## 156

**Title:** Continuity of Care in Assisted Living Facilities

**Presenter(s):** Joyce Linnerud Fowler

**Department:** Public Human Services Administration

**Advisor:** James Danielson

**Abstract:** One of the dynamic challenges within our society is how to care for elderly citizens who go through stages in their lives associated with the aging process and declining health. Assisted living facilities, mindful of these changes in the needs of the elderly, are attempting to develop relatively "seamless" transitions from the least intense care to the most intense care. Institutions face structural and marketing challenges. This administrative policy analysis examines opportunities, costs and possible alternatives that are involved in responding to these organizational challenges.

## 157

**Title:** Female Genital Mutilation: A Human Rights Abuse?

**Presenter(s):** Nina Tupy

**Department:** Political Science

**Advisor:** Andrew Conteh

**Abstract:** While a cultural practice for centuries, Female Genital Mutilation (FGM) has only recently come under fire as a human rights abuse. FGM, otherwise known as female circumcision or excision, refers to all procedures involving partial or total removal of the external female genitalia or other injury to the female genital organs whether for cultural or other non-therapeutic reasons. The procedure has gone under high debate between those who feel FGM is a human rights abuse and those who support it as a cultural tradition. My research will focus on four primary areas: defining FGM and how the procedure is done, explaining why it is practiced in certain cultures, why it is considered by so many as a human rights abuse, and last, what is being done and what obstacles must be overcome to end it.

## 158

**Title:** The Role of the RhoA Dependent Kinase ROCK on ERK Activation

**Presenter(s):** Justin Voog, Andrew McCoy

**Department:** Biology/Chemistry

**Advisor:** Mark Wallert and Joseph Provost

**Abstract:** Phenylephrine (PE), an  $\alpha$ -1 adrenergic receptor agonist, has been shown to activate both Extracellular Regulated Kinase (ERK) and the Sodium-Hydrogen Exchanger (NHE-1) in Chinese hamster lung (CCL39) fibroblasts. Activation of ERK, an upstream tyrosine/threonine kinase in the NHE activation cascade, can be blocked with the addition of the ROCK inhibitor Y27632. Conserved in a variety of cell lines is the dependence of ROCK activation mediated by RhoA. Cycling between active, GTP-bound and inactive, GDP-bound states, RhoA acts as a molecular switch to control a number of cellular processes including ROCK activation. Dominant-negative RhoA-transfected CCL39 cells incubated with PE had a dramatic reduction in phosphorylated ERK levels. We hope to show that PE addition triggers RhoA-GTP binding, causing it to migrate from the cytosol to the membrane where it is able to interact with ROCK. GFP-tagged RhoA transfected cells will allow translocation of RhoA to be monitored via fluorescent microscopy. To help further support the PE mediated activation of RhoA, PE stimulated cells will be treated with GST-ROCK fusion protein in hopes of co-precipitation with GTP-bound RhoA. Determining the role of ROCK and Rho and its effect on NHE activation is yet to be determined.

## 159

**Title:** Defining a Role for the Arp2/3 Complex in Mitochondrial Morphology and Inheritance

**Presenter(s):** Aaron Sykes, Damian Holznagel

**Department:** Biology/Chemistry

**Advisor:** Ellen Brisch

**Abstract:** The mitochondrion is a complex organelle with a double membrane (inner and outer), its own genome and a separate protein synthetic machinery. A variety of important cellular functions are carried out by the mitochondrial compartment including reactions of the TCA cycle, oxidative phosphorylation and ATP production. In the budding yeast, *Saccharomyces cerevisiae*, mitochondria must be inherited. Mitochondria are transferred from mother to daughter cell in a process termed budding. The mitochondria's genetic integrity is dependent upon mitochondrial morphology. In wild type cells, mitochondria form a long, tubular, branched network. There is evidence that the actin cytoskeleton is a crucial component because the cytoskeleton controls mitochondrial morphology and inheritance during vegetative yeast cell growth. Numerous actin mutants have been identified that display abnormal mitochondrial morphology and inheritance. The Actin Related Protein 2/3 complex (Arp2/3) is a septemer of highly conserved, distinct polypeptide subunits. The Arp2/3 complex has been shown to nucleate actin polymerization at membranes. This polymerization has been implicated in mitochondrial movement. In fact, two mitochondrial membrane proteins, Mmm1p and Mdm10p, are also required for the association of the Arp2/3 complex with the mitochondria. It is our contention that mutations to the different subunits of the Arp2/3 complex will result in aberrant mitochondrial

morphology and inheritance. By creating yeast mutants lacking subunit(s) of the Arp2/3 complex and examining them microscopically with the aid of DiOC6 dye, to preferentially stain mitochondria and Rhodamine Phalloidin to stain actin, it will allow for screening of abnormal morphology and inheritance. This may provide insight into the role of the Arp2/3 complex in mitochondrial motility and morphology.

## 160

**Title:** Differential ERK Activation in Chinese Hamster Lung (CCL39) Fibroblasts by Primary Alcohols and Dominant-Negative MEK

**Presenter(s):** JaDean Anderson, Brad Moran

**Department:** Biology/Chemistry

**Advisor:** Mark Wallert and Joseph Provost

**Abstract:** Serum, growth factors, and lysophosphatidic acid activate the  $\text{Na}^+$ - $\text{H}^+$  exchanger (NHE) in Chinese hamster lung cells (CCL39). Recently, our laboratory reported that the  $\alpha$ 1-adrenergic agonist phenylephrine (PE) activates NHE through an ERK-dependent pathway. We believe that PE stimulation diverges and involves several intermediates in the regulation of NHE. One pathway involves the activation of Phospholipase  $\text{C}\beta$ , Protein Kinase  $\text{Ca}$ , Raf-1, MEK and Erk. A second potential pathway, involves the PKC-mediated activation of Phospholipase D (PLD). PLD converts phosphatidocholine to choline and phosphatidic acid. In some cells types, phosphatidic acid leads to the activation of the Ras-Erk pathway directly or by activating another isoform of PKC that can phosphorylate Raf, MEK, or Erk. The goal of our experiments is to determine the involvement of PLD in this activation process and whether the activation occurs at the level of MEK or above. The involvement of PLD will be tested by the addition of the primary alcohols butanol and ethanol to the cells. If PLD is involved, this will block the formation of phosphatidic acid and the activation of the Ras-Erk pathway. By adding a secondary alcohol to the cells, PLD will not convert phosphatidocholine to phosphatidic acid, thus having no effect on ERK regulation. To investigate the activation of the Ras-Erk pathway at the level of MEK, a dominant-negative MEK construct has been transfected into cells. This construct blocks the passage of the signal from Raf-1 to Erk. Erk activation by PE is completely blocked by the addition of dominant-negative MEK.

## 161

**Title:**  $\alpha$  Adrenergic Specific Signaling in Chinese Hamster Lung (CCL39) Fibroblasts

**Presenter(s):** Genny Clausen, Jenny Lang

**Department:** Biology/Chemistry

**Advisor:** Mark Wallert and Joseph Provost

**Abstract:** The activity of NHE is regulated by the action of a wide variety of plasma membrane receptors. Included in this list are G-protein coupled receptors (GPCRs). The actions of these receptors are responsible for growth regulation and tissue regeneration. Mutations in these GPCRs have the potential to cause tumor growth and cancers. Phenylephrine (PE), an analog of norepinephrine, is used to study the adrenergic receptor pathway of NHE-1. Our experiment will test the receptor specificity of PE response. PE is added in the

presence of three different inhibitors. The ERK activation is measured with the goal of finding which receptor class is activated. We will use propranolol which is a  $\beta$  adrenergic receptor blocker, prazosin which is an  $\alpha_1$  adrenergic receptor blocker, and yohimbine which is an  $\alpha_2$  adrenergic receptor blocker. These studies will determine the specific receptor involved with ERK regulation.

## 162

**Title:** The Role of Phenylephrine in the Formation of Stress Fibers in Chinese Hamster Lung Fibroblasts

**Presenter(s):** Jenny Dale, Jessica Heck

**Department:** Biology/Chemistry

**Advisor:** Mark Wallert, Joseph Provost, and Michelle Mallot

**Abstract:** Actin monomers in the cytoplasm of cells polymerize forming stress fibers under a variety of culture conditions. As a component of the cytoskeleton, stress fibers play an essential role in the process of cell growth and division. The formation of stress fibers is dependent upon the activation of the small G-protein RhoA through its effector Rock as well as the activation of the  $\text{Na}^+\text{-H}^+$  exchanger (NHE). The primary role of NHE is to control intracellular pH. Thus the activation of both RhoA and NHE is required for stress fiber formation. The lipid agonist Lysophosphatidic Acid (LPA) has the ability to initiate the formation of stress fibers in Chinese hamster lung (CCL39) fibroblasts. Building on this knowledge, we sought to demonstrate a novel role for Phenylephrine (PE) stimulating this same process. Our laboratory recently demonstrated that PE stimulated NHE activity in these cells. To test PE ability to stimulate stress fiber formation CCL39 fibroblasts were incubated with 100 $\mu\text{M}$  PE. Stress fiber formation was measured using fluorescent labeled phalloidin. Micrographs of cells with and without PE treatment were then made. Stress fibers could be seen at a much higher density in PE treated cells than in untreated cells. This is contradictory to past data dealing with Gq, the G-protein that initiates the PE pathway. Because the pH level of a cell is a known factor of stress fiber formation, we used PS127 cells, which overexpress NHE, and PS120, which lack the exchanger, to attempt to determine the link between stress fibers and intracellular pH.

## 163

**Title:** The Activation of PKCa is Required for the Phenylephrine-induced Activation of the  $\text{Na}^+\text{-H}^+$  Exchanger in Chinese Hamster Lung Cells, CCL39

**Presenter(s):** Nichole Korpi

**Department:** Biology/Chemistry

**Advisor:** Joseph Provost

**Abstract:** The Activation of PKCa is Required for the Phenylephrine-induced Activation of the  $\text{Na}^+\text{-H}^+$  Exchanger in Chinese Hamster Lung Cells, CCL39. Nicole L Korpi, Heidi A Boyum, Joseph J Provost, Mark A Wallert, Biology/Chemistry, Minnesota State University Moorhead, 1104 7th Ave So, Moorhead, Minnesota 56563, Chemistry, Minnesota State University Moorhead, Moorhead, Minnesota, Biology, Minnesota State University Moorhead, Moorhead, Minnesota The  $\text{Na}^+\text{-H}^+$  exchanger isoform 1 (NHE-1), which is present in virtually all mammalian cells, has been linked to a variety of hormones, growth factors, and oncogenes. The mechanism of the activation of the NHE-1 varies depending on cell and agonist type. Phenylephrine (PE) activation of NHE-1 requires

extracellular kinase (ERK) activity. ERK-mediated NHE-1 activation can occur through a Ras dependent or independent pathway. The involvement of PKCa in PE induced  $\alpha_1$ -adrenergic activation ultimately activates ERK and NHE-1 by phosphorylation of upstream elements of the ERK signaling pathway. The role of PKCa in both ERK and NHE-1 activation was studied. Addition of PE led to an increase in both phosphorylation of ERK and activation of NHE-1. Pre-incubation with a nonspecific protein kinase inhibitor, staurosporine, blocked PE-induced ERK and NHE-1 stimulation; thus, showing the dependence on ERK activation. Pre-incubation with Go G976 blocked PE-induced ERK and NHE-1 activation; thus, indicating that PKCa was specifically involved in PE signaling pathway. Addition of PE leads to the translocation of PKCa. In the inactivated state, PKC is soluble (cytosolic) or loosely associated with the plasma membrane. Upon activation, PKC becomes tightly associated to the cellular membrane. The intracellular location of PKCa after PE addition was determined by analyzing fractions of the cytoplasm and the membrane by western blotting. In addition, fluorescence microscopy with GFP/PKC fusion protein was used to follow the movement of PKCa through the cell before, during, and after PE addition. The data suggests that PKCa translocation was involved in the ERK mediated activation of NHE-1 by the  $\alpha_1$ -adrenergic receptor and phosphorylation of Raf. This work was supported by a grant from the NSF MCB-0080243.

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**Title:** ERK-mediated Activation of the  $\text{Na}^+\text{-H}^+$  Exchanger in Chinese Hamster Lung Fibroblasts is Dependent Upon Phospholipase C $\beta$

**Presenter(s):** Sarah Olmschenk

**Department:** Biology

**Advisor:** Mark Wallert

**Abstract:** The primary regulator of intracellular pH (pHi) in Chinese Hamster Lung (CCL39) fibroblasts is the  $\text{Na}^+\text{-H}^+$  Exchanger (NHE). Various protein kinases regulate NHE, including extracellular-signal regulated kinase (ERK), which is required for phenylephrine (PE) -induced NHE activation. We are now investigating how additional signaling intermediates play critical roles in NHE activation. One such molecule, Phospholipase C $\beta$  (PLC $\beta$ ) was examined using several different experimental techniques. Normally, 100  $\mu\text{M}$  PE increased pHi 0.16  $\pm$  0.03 pH units. However, in the presence of the PLC-specific inhibitors neomycin, Et-18-OCH $_3$ , and U-71322, pHi only increased 0.05, 0.01, and 0.02 pH units, respectively. A concomitant reduction in ERK activity was also observed. To emphasize the role of PLC, two mutant cell lines depleted in PLC activity, 2A-4b and D1-9b, were used. Upon PE addition, pHi increased only 0.04  $\pm$  0.02 and 0.05  $\pm$  0.02 pH units, respectively. PE-stimulated ERK activation was also dramatically reduced in both mutant cell lines. Finally, to further confirm the necessity for PLC $\beta$ , 2A-4b and D1-9b cells were transfected with PLC $\beta$ 1, 2, and 3. Following PLC $\beta$ 1 transfection, both cell types again displayed ERK and NHE activity similar to the displayed CCL39 response. This work further demonstrates the critical role of PLC $\beta$  in alpha adrenergic signaling.

165

**Title:** Is God a Philosopher?

**Presenter(s):** James Grindeland

**Department:** Philosoph1y

**Advisor:** David Myers

**Abstract:** The traditional Judeo/Christian/Islamic God is said to be all-knowing, which implies that She can think. But does She really know that She is all-knowing, or is She uncertain? I will argue two points: first, that since some questions are in principle uncertain, that a maximally intelligent being would be uncertain about at least such questions; and second, that if God is a maximally intelligent being, and if She has doubts, that from a moral standpoint She shouldn't mind if we also have doubts. It follows, then, that just because we're skeptical, doesn't mean we're damned; and any religion that says we're damned for not believing it, must be false, provided God is moral.

166

**Title:** Set design and the Model Building process

**Presenter(s):** Sarah Swenson

**Department:** Theatre Arts

**Advisor:** Theresa Carson Roray Hedges

**Abstract:** I will be briefly discussing the design process and how to build a 1/2" scale model for scenic purposes, using my set design for MSUM's "Arms and the Man" as my primary example.

167

**Title:** History of Old Georgetown: The True Survivor

**Presenter(s):** Eric Mimnaugh

**Department:** History

**Advisor:** Stephen Hoffbeck

**Abstract:** Abstract should be e-mailed to [aconf@mnstate.edu](mailto:aconf@mnstate.edu) by Friday, February 22, 2002 by 4:00 p.m.

168

**Title:** Discipline and Punish: The Arthur Murray Method

**Presenter(s):** Joshua Smith

**Department:**

**Advisor:**

**Abstract:** This presentation will examine the Arthur Murray Dance Method in terms of French philosopher/historian Michel Foucault's book Discipline and Punish. Foucault describes the changes in society's control of individuals from medieval times to the present as a shift from overt to covert. This presentation proposes that the Arthur Murray's method is one example of contemporary societal control over the individual.

# Mark Your Calendars!!

## April 2002

- 4/16 UG Unplugged.....8:30 p.m. in the Underground
- 4/22 Big@\$\$ CABstock.....All day next to Ballard Hall  
Outdoor BBQ, Musicfest, Velcro Wall,  
Gladiator Joust, and a Rock Climbing Wall!!!
- 4/23 Comedian Tammy Pascatelli.....8 p.m. in the Underground
- 4/30 Mission IMPROVable.....8 p.m. in the CMU Ballroom  
Improv Comedy Group

For more information call the CAB Office at 236-2264.

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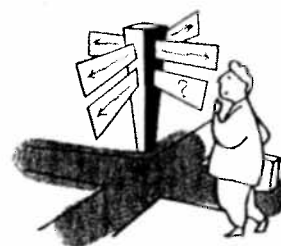
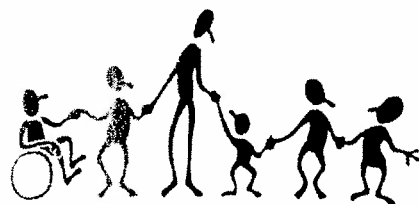
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April 10, 2002

The MSUM Counseling and Career Services strive to promote and assist in the development of healthy, self-responsible students who seek the inner strength to embrace life transitions during and beyond their collegiate experience.



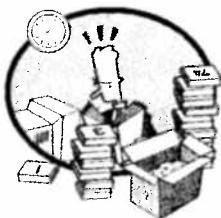
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M – TH 8 – 5 p.m. closing at  
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- Personal & Career Counseling
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- Career Information Resource Room
- Internship Opportunities
- Dragon Careers On-Line
- Career & Job Fairs
- On-campus Recruiting
- Professional Job Listings on Website
- Center for Business Satellite Office



As sponsors of the **Closing Social in the CMU Main Lounge at 3:50 p.m.**, we are proud to welcome the university community, parents, friends, prospective students, alumni, and employers to witness diverse intellectual exchanges among MSUM students at the 4<sup>th</sup> Annual Student Academic Conference on April 10<sup>th</sup>, 2002.





Student Academic Conference web site:  
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